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No. II. OF VOL. II., 1923. LONDON, SATURDAY, JULY 14, 1923. Pp. 112—Price 1s.
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LECTURE I.*

THERE is hardly one, if indeed there is one, subject in medicine or surgery of which we can say that finality of knowledge has been reached. The inexactitude of our knowledge of the diseases of, or even of the normal condition of, the thyroid is especially noticeable, and the more we study this subject the more we realise how uncertain are our views and how we must be prepared to alter them as fresh evidence arises. It is manifestly impossible to discuss the whole subject in two lectures; I therefore propose to limit my remarks to the various forms of innocent overgrowth of the gland, for to such lesions surgical measures of treatment are most applicable. These overgrowths may for convenience be best classified as follows:—(*a*) Localised: adenomata and fibro-adenomata, cysto-adenomata, and pure cysts; (*b*) Diffuse: colloid goitre, adeno-parenchymatous goitre, and exophthalmic goitre or Graves's disease.

If such rare cysts as hydatids are excluded from the first group it will be found that all these lesions commence as pure adenomata; in the second group the adeno-parenchymatous is simply a combination of colloid goitre and adenomatous masses, although, as I shall show presently, there is a definite tendency for a colloid goitre to develop localised overgrowths. Hence, as Plummer has frequently insisted, there are really only three innocent overgrowths of the thyroid, although various combinations of such overgrowths frequently occur. These primary enlargements are adenomata, colloid goitre, and exophthalmic goitre.

ADENOMATA.

Pathology.

True adenomatous enlargements commence in a thyroid which is previously healthy and are definitely localised and encapsulated. This point must be emphasised because many of the localised overgrowths, especially those seen in endemic goitre and thus found in association with more diffuse changes, have a less well-defined capsule and are, in fact, often not adenomata at all. The true adenomata are frequently single, although not uncommonly two or three may be present. They occur in any part of the gland. In the early stages they form spherical masses of solid glandular tissue which show already a distinct fibrous capsule. They tend steadily to progress in size, but rarely reach the diameter of 1 inch without showing definite evidence of degeneration. The microscopic study of a small adenoma will show that it consists of vesicles lined by epithelium, cuboidal or flattened according to the size of the vesicle. These are much larger than normal, and may be 10 or 20 times the size of the vesicles seen in a healthy gland. In nearly all cases the characteristic feature is the irregularity in the size of the vesicles, many small vesicles being packed between those which are enlarged. As the vesicles increase the walls atrophy and the adjacent cavities run together. It therefore happens that an adenoma 1 inch or more in diameter nearly always shows areas of so-called colloid degeneration—that is to say, there are spaces perhaps only as large as a pea, perhaps 1 inch or more in diameter, which are filled with semi-fluid colloid material. This is the origin of the ordinary cystic degeneration of an adenoma, and in some cases the process may progress so far that the whole of the vesicular walls are destroyed and a pure cyst is left, formed of the original fibroid capsule and filled with fluid colloid material. During the destruction of the vesicular walls capillaries may be ruptured and hæmorrhage may take place into the cavity of the cyst. Hence the fluid is either brown in colour or is formed almost wholly of altered blood. At times the hæmorrhage is severe so that the cyst rapidly increases in size, and on removal is seen to contain a large quantity of blood. In the more chronic cases there is an increase of fibrous tissue in the capsule or in the septa. Such a change may be excessive, so that the adenoma in very large part is formed of fibrous tissue, giving rise to the so-called fibro-adenoma. At other times there are calcareous changes within the fibrous tissue, and it is not at all uncommon in old adenomata to find small areas which grate when the tissue is cut and which consist of a calcareous deposit, or sometimes indeed of true bone. This calcareous change may be so excessive that the whole capsule is converted into a stony membrane which does not collapse when the tumour is incised. Another very important and not infrequent change is the formation of the so-called thyrotoxic or fœtal adenoma. Plummer[24] was the first to direct attention to this condition, although Langhans[15] had previously laid considerable stress upon a condition which he described as proliferating goitre. In such fœtal adenomata a naked eye section will show that the tumour has a much more fleshy or granular appearance. In fact, the cut surface will much more resemble that of an exophthalmic goitre than of a normal thyroid. Microscopically it will be seen that the section is made up of solid masses of cells which are often small and embryonic in type, and if arranged in lobules show a very small amount of stroma between. Bloodgood[2] and Goetsch[10] have both called attention to the fact that in the normal thyroid there are two types of cell. There are those forming acini with a more or less definite basement membrane and certain interstitial epithelial cells which lie loosely between the acini. Meleney[23] has shown that it is these interstitial cells especially which are so increased in the formation of the fœtal adenomata. The importance of this change lies in the effects of such cellular overgrowth. McCarrison[16] regards these cells as reserve parenchymatous cells from which new acini are formed as required. In their more embryonic state they may, when they proliferate, not only give rise to hyperthyroidism, but may, indeed, closely resemble in appearance a carcinomatous change. The difficulty in making a differential diagnosis is increased by the fact that not infrequently this variety of tumour does in fact become true carcinoma. Speese and Brown[25] investigated a series of 28 cases of malignant disease and found that 19 of these arose in previous adenomata and that the average time that elapsed before the adenoma showed malignant changes was $12\frac{6}{10}$ years. It was interesting to note also that in five of these cases of carcinomata toxic manifestations of the adenoma were present before there was definite malignant change. Wilson[27] believes that practically all malignant tumours arise from this variety of fœtal adenomata. In a later communication he[28] investigated the complete literature of this subject and found that there were 193 malignant tumours in a series of 74,335 collected necropsies. Of 97 cases in the Mayo Clinic 50 were only diagnosed by pathological section after removal. Of a further 290 cases in the same clinic only 61 had not noticed a previous thyroid enlargement. He says that if the enlargements are due to circumscribed proliferation of the parenchymatous tissue they are adenomata. If they remain encapsulated and slowly degenerate they are benign. If they are associated with symptoms of slowly developing hypermetabolism with cardiac disturbances they are toxic non-exophthalmic goitre, the toxic adenomata of Plummer. If they continue to proliferate they penetrate their capsule, invade and metastasise, and are then malignant. He points out that histologically it may be almost impossible to differentiate the fœtal adenomata from the carcinoma. He therefore lays

*Lecture II. will appear in a forthcoming issue of THE LANCET.

down the dictum that any sizable adenoma composed of embryonal tissue, if in a patient of cancer age, is potentially malignant although still contained entirely within the capsule.

Ætiology.

Although histologically these tumours appear to be simple adenomata they manifestly differ very considerably in many particulars from adenomata elsewhere. They frequently occur in association with endemic and colloid goitre. As will be shown later they very often have a definite function and may give rise to hyperthyroidism. They also react very considerably with the needs of the body tissue, and thus are often found enlarged during pregnancy and menstruation. The single localised adenomata may possibly be due to the same factors that give rise to more general enlargements, but the evidence on this point is much less clear. There is, however, a very distinct family history. In my own series of 155 operated cases there were 21 in whom other members of the family, usually sisters or brothers, were affected. In such cases there was usually more than one other affected member in the family, and thus it is possible, just as with the endemic and colloid goitres, that this is not an hereditary fault but that all the children and perhaps the parents are exposed to the same faults, whether they be toxic or dietetic. The researches of Kocher and McCarrison seem to show that single localised adenomata are relatively rare in the endemic areas. As with all other varieties of thyroid enlargement the female sex is much more frequently affected than the male. In my own series there were 14 males and 141 females. The age of onset is somewhat later than that of the colloid goitres, and in my own series many first noticed the tumour between the ages of 30–40. Like the colloid condition, however, the change is often first noticed at puberty.

Symptoms.

A small, localised mass occurring in one lobe of the thyroid may be present for many years, and beyond causing the patient a certain amount of annoyance from its unsightly appearance may give rise to no symptoms. Very often, however, a patient who is afflicted, even with a relatively small adenoma, will complain of a considerable amount of pain and discomfort. The majority seek advice chiefly on account of the increasing deformity. In my own series this symptom was complained of in nearly every case, but it was the sole complaint in 30 cases only. When the tumour has reached a considerable size the deformity may be very great, and when it is sufficiently large to attract the notice of the patient's friends may cause considerable annoyance. If pain alone is complained of, it would seem often to be more imaginary than real. The patient will state that there is a pricking sensation in the throat and that there is pain in swallowing. At other times she will complain of pain commencing in the tumour itself, radiating widely up the neck and passing to the head. Only on rare occasions is it noticed, when other symptoms are absent, that there is a feeling of localised heaviness and pressure. If there is a sudden increase in size from the presence of a hæmorrhage, the pain may be considerably increased.

The most important symptom, and the one which most frequently demands intervention, is that of pressure upon the surrounding structures, especially upon the trachea. When the tumour has reached a certain size there is always some dyspnœa; this symptom determines the necessity of operative interference. In some cases it may be very slight or only present upon exertion, so that if the patient is able to lead an easy and comfortable existence it will cause little disability. When the adenoma is placed posteriorly, or if there be two adenomata, one in each lobe, the pressure and resulting deformity is likely to be more marked and the dyspnœa will then be increased. In some cases, indeed, it may have progressed so far before treatment is sought that the patient may have difficulty in sleeping, and may have to lie in bed with her head and shoulders well propped up. If there has been any sudden increase in size, either from hæmorrhage or from some inflammatory change, the dyspnœa will be rapidly increased and may become a serious and dangerous symptom. The condition is much more marked if an adenoma in the lower part of the thyroid has grown downward and become fixed within the thoracic entry. Such a condition, which is usually described as a retro-sternal goitre, is relatively rare. In Berry's[1] series of 500 cases it was only present in 22. Under such conditions the dyspnœa may be most alarming. During expiration the mass may be forced up in the neck and the air may escape with comparative ease, but during inspiration it is drawn down, the trachea is further obstructed, and there is great difficulty in the air entering the lungs. It is well to remember that dyspnœa with a thyroid adenoma may not be due to the visible tumour. A patient may have a prominent adenoma in front of the thyroid and yet the dyspnœa may be entirely due to a second adenoma seated more posteriorly or to an intrathoracic growth which is barely visible. Some of these retrosternal goitres may, indeed, on an ordinary examination, be entirely overlooked, although as a rule they will be pushed up into the neck during forced expiration, such as occurs on coughing. Some, however, may be only diagnosable after an X ray examination of the upper portion of the thorax. Fortunately, these large and more fixed growths have not uncommonly undergone a calcareous change, so that they will give a well-defined shadow on an X ray examination. Other pressure symptoms are relatively uncommon. Now and again patients will complain of difficulty in swallowing, but such a symptom is rare. Occasionally a simple adenoma may be accompanied with alterations in the voice from pressure upon the recurrent laryngeal nerve. It is well to remember this, for it used to be believed that the presence of such symptoms was a clear indication of carcinomatous changes.

Adenomata of long standing are not uncommonly associated with some evidence of hyperthyroidism. Special stress has been laid upon this change, for it has often been claimed that the good results of the surgical treatment of exophthalmic goitre are due to the inclusion of a large number of these cases which can be operated upon with practically no risk. Plummer[21] was the first to clearly differentiate between these two conditions. As a rule the changes do not develop until the adenoma has been in existence for many years. Judd[12] found that in a series of 100 cases the toxic symptoms only developed after an average period of 19⅓ years, and in Sistrunk's[26] series only after an average period of 16 years. Haggard and Dunklin[11] found that a large number of their cases developed such symptoms, but they were usually only present in patients between the ages of 35 and 40. They also laid stress upon the fact that such symptoms were very likely to be induced by the administration of iodine, which is so often given to elderly women with long-standing goitre. Although in these cases there is a very definite evidence of hyperthyroidism, this is, as a rule, incomplete. The cardiovascular system is usually more affected, the pulse is increased in rapidity, and later is often irregular; there is evidence of cardiac dilatation, and auricular fibrillation may be present. Although there may be a small amount of tremor the nervous system is always affected to a less degree than in true Graves's disease. It is occasionally stated that there may be some degree of exophthalmos, but in my own series I have never been able to find any true eye changes with a toxic adenoma. It must be remembered here that a patient who has true Graves's disease—that is, a cellular proliferation of the whole of the thyroid gland—may also have an adenoma. In such a case, which must be sharply distinguished from a toxic adenoma, the characteristic nervous and ocular symptoms of true Graves's disease will be present. In these cases of fœtal adenomata the basal metabolic rate is never increased to the same degree as with true Graves's disease. Haggard and Dunklin[11] found, for instance, that in their series it was raised

by about 35 per cent., as compared with a 66 per cent. average increase in Graves's disease. Moreover, after operation it rapidly falls, so that it is only increased by 7 per cent. within two weeks of operation. In the later stages there will not infrequently be evidence of renal degeneration.

Treatment.

If these adenomata of the thyroid gland were ætiologically comparable with adenomata elsewhere, an operation would be indicated in them all, for being true tumours no other treatment would be available: they would steadily increase in size, there would be the danger of sudden enlargement and dyspnœa, and of the onset of malignancy. It has been my aim, however, to show that in many ways these tumours differ from true adenomata, and hence the general surgical rules are not applicable. I would regard as indications for operative interference:—

1. *Failure to Obtain Relief by Medical Measures.*—If, when first seen, the tumour is associated with a diffuse enlargement, medical treatment should always be tried. It may happen that the adenomatous mass will entirely disappear, but even in the more unsatisfactory cases the general enlargement will lessen and the size and shape of the adenomata will become better defined. It is my custom also in all cases in which the adenoma is soft and ill-defined to try a course of medical treatment. In such cases the mass is less likely to be a true tumour, and not uncommonly very considerable improvement, if indeed not a complete cure, may be obtained by such measures. If, however, the tumour is very hard and sharply defined, which usually means that there is either some degenerative change in the wall of the adenoma or that it has been converted into a cyst, then, manifestly, no medical measures will bring about a cure.

2. *A Steady Increase in Size with Resulting Deformity.*—If these tumours are very small, and give rise to no disability, no operation need be undertaken, but in such cases a careful watch should be kept upon the patient, and this is more especially so if she is over the age of 30. In fact, if a tumour has been in existence for many years, and the patient is 35 years or more, an operation should be advocated, especially if there be the slightest evidence of any toxic symptoms, for it is these cases that are so likely to become malignant in later years. If the tumour is so large that it causes a definite deformity, operation is clearly indicated. There is, perhaps, one exception to this statement, and that is if the patient be pregnant. Unless there be very urgent dyspnœa, no operation should ever be undertaken for a goitre during pregnancy. It is astonishing to what an extent an enormous goitre seen in the later months of pregnancy may diminish in size within a month or two after the confinement or after the completion of lactation.

3. *The Presence of Dyspnœa.*—This is the chief and most important indication for operative interference, and even if it does not greatly interfere with the patient's life it is evident that pressure is being caused and that the tumour is enlarging. Should difficulty in breathing be so marked, or should the patient's employment be such that her work is seriously interfered with, the necessity for operation will be much more urgent. If the disease has been allowed to progress so far that the patient cannot sleep on lying down, the operation should be undertaken as soon as possible, for at any time an attack of severe dyspnœa may occur, and if it takes place at night it may give rise to a fatal result before help can be obtained. Acute temporary attacks of suffocating dyspnœa are probably due to hæmorrhages and are a clear indication of the urgent need of operative treatment. The presence of a retro-sternal goitre causing dyspnœa will call for interference as soon as possible, for the longer the condition is left the greater the danger and the more difficult the operation.

4. *Other Pressure Symptoms.*—Evidence of pressure upon the recurrent laryngeal nerve, blood-vessels, or œsophagus is usually evidence of the rapid increase in size of the adenoma, and is therefore an indication for removal.

5. *Presence of Pain.*—A complaint of pain without other symptoms is rare, but sometimes it may be an indication of early carcinomatous changes, and in any case, if it be sufficient to cause the patient discomfort, operation should be undertaken at an early date.

6. *Presence of Hyper-Thyroidism.*—Not only are toxic changes a considerable danger to the patient, but, as has already been pointed out, such cases are more likely to undergo carcinomatous change. An operation should therefore be strongly urged. It is remarkable to what an extent the grave discomfort which is caused by the toxæmia will improve by operative treatment. Unless degenerative changes have already been set up in the heart and kidneys the whole of the symptoms will frequently disappear within two or three weeks of removal of the tumour.

In performing an operation upon an adenoma many precautions will have to be taken. As a routine measure ether will always be the anæsthetic of choice. Chloroform for any goitre operation is a dangerous drug. If there be many toxic symptoms large quantities of fluid and a prolonged rest in bed will often be a valuable preliminary of operation. These measures will, however, be discussed more fully when operations for exophthalmic goitre are considered. If there be pressure symptoms the anæsthesia should be very light. Under such circumstances the intra-tracheal ether held out great hopes, but it cannot be said to have fulfilled expectations. Crotti[3] has laid stress upon the defects of this measure, which he says has often proved unsuccessful because of the necessity of anæsthetising before passing the tube. Extreme hyper-extension of the head is required and occasionally the tube may fail to pass beyond the obstruction. The operation of choice is that of enucleation of the adenoma. In actual practice, however, this is only carried out with very small adenomata. The larger tumours are so firmly adherent and have so greatly thinned out the front of the thyroid that a wedge of this anterior surface is usually excised and the adenoma then shelled out from the thyroid tissue behind. To this operation Berry has given the name of resection-enucleation, and it is unquestionably the operation of choice, for it removes only the tumour and leaves behind all the normal thyroid tissue. After removal the cavity of the thyroid gland is closed with a running mattress suture which obliterates the cavity and completely controls all hæmorrhage. It is always advisable after such an operation to insert a small tube for 24 or 48 hours. No harm is done by such a measure, and the resulting scar is practically invisible. In certain cases where an adenoma is very large and limited to one lobe the tissue of that lobe may be so destroyed that a hemithyroidectomy may be required, but this is only the case in exceptional circumstances. Where the adenomata are many and are associated with a diffuse enlargement, a modification of the wedge resection—which will be described as the operation for colloid goitre—may be requisite. The greatest technical difficulties are found in operations for a retro-sternal goitre. Fortunately, however, these goitres receive all their blood-supply from above, so that the vessels passing down to the goitre can be all ligatured and divided before the removal is essayed. It is in the delivery of the mass from within the thorax that the greatest difficulty and danger may be encountered, for at such a time pressure upon the trachea is greatly increased.

Results of Operation.

The results of operative treatment on these lines are extremely satisfactory. The danger of operation is almost non-existent, and if it were not for the presence of long-standing hyperthyroidism with its cardiac degeneration, or of severe pressure such as is seen in the retro-sternal goitres, there would be practically no mortality. In my own series there were three deaths in 155 cases, and in all these cardiac changes were advanced. The after-results, too, are

extremely satisfactory. Single adenomata practically never recur, but if they are multiple, and especially if there be any diffuse change in the gland, a more guarded prognosis must be given. Not only is the mortality of operation very considerably higher, but the adenomata are more likely to recur, so that now and again cases will be met with in which, a year after operation, the goitre is as large as before.

COLLOID GOITRE.

The colloid goitre, or, as it often used to be called, the parenchymatous goitre, differs from an adenoma in so far as the change is diffuse and not limited to one small section of the gland. Two types of the disease are described, the endemic and the sporadic, but it is probable that there is no real difference in these two conditions. In certain areas, such as Switzerland and in the Gilgit and Chitral Valleys, the work of Kocher and McCarrison[19] has shown that the disease is so widespread that a very high proportion of the population may be severely affected by the disease. It is probable, however, that in these places the same causative factors are only present to a more marked degree. In England the disease is now widespread, and although it is still the custom to describe areas where it is endemic, it is very doubtful whether a much higher proportion of cases is situated in these areas. The actual frequency in England is difficult to ascertain, as so many cases are of a minor degree which do not require any operative interference. More advanced examples form, however, a very large proportion of the cases attending hospital out-patient departments, so that unquestionably the disease is very widespread. In the endemic areas it is a most serious menace. Oswald of Zurich states that 1900 Swiss recruits are discarded each year for low stature, which is due in part to a cretinoid state, and that there were 50,000 cretins recognisable at sight. McCarrison[16] found that in some Himalayan villages the disease was so common that it was difficult to find a man, woman, or child not suffering from the deformity. In India as a whole, at the time he wrote, there were not less than 5 million persons afflicted with goitre, while ¼ million was a low estimate of the numbers who suffered from its congenital manifestations. He also states that in some Himalayan villages as many as 60 per cent. of infants still at the breast have been found to be goitrous.

Pathology.

The essential pathological change as found in young girls in England is a diffuse enlargement of the whole thyroid gland. The normal shape is more or less maintained, the surface is smooth with large vessels running beneath the capsule and shows no nodular enlargement. The increase in size may be very considerable, a lateral lobe not infrequently being 5 in. in length and 3 in. in width and thickness. The gland is much firmer in substance, and on cut section has a characteristic appearance. The surface consists of small globules which are visible to the naked eye, the appearance being somewhat similar to that of a sago pudding. It is yellow-pink in colour and not very vascular. On microscopic section there is an enormous increase of colloid material. The vesicles are dilated to 30 or 40 times their normal diameter and are filled with colloid. The material differs from that of a normal gland in that it is much more readily stained with eosin. The lining membrane of the dilated acini consists either of a single layer of cuboidal cells or of cells which have become flattened from the pressure of the colloid. The inter-acinar cells are seen in clumps between the dilated acini and are not increased in number. In England the pathological changes do not as a rule progress beyond this, but if the condition has been long in existence further changes may take place in one of three directions: (1) Degeneration of the thyroid tissue; (2) formation of localised adenomatous masses; or (3) a diffuse proliferation passing on to Graves's disease.

In the first condition the acinar walls may break down, masses of colloid may collect, or there may be evidence of a chronic inflammatory change passing on to fibrosis and even to hyaline and calcareous degeneration. If these degenerative changes proceed to an extreme degree the patient may become myxœdematous and the thyroid will then decrease in size and may be replaced by a fibrous atrophic mass. In long-standing cases it is not uncommon for rounded or circumscribed masses to develop apart from the main tissue of the thyroid. These are sharply defined and appear to be adenomatous, but they rarely have the same well-defined capsule as is shown by the true adenomata. McCarrison regards them as degenerative masses which arise from the inter-acinar cells and as an attempt on the part of the thyroid to replace that portion which has undergone atrophy. Hence, in the endemic areas large nodular thyroids, which in this country are often described as the adenoparenchymatous type, are common. The adenomatous masses themselves, just like the simple adenomata, will show varying changes. There may be a colloid degeneration with the formation of cystic-like spaces; there may be masses of fibrous or calcareous tissue or there may be a large cellular proliferation giving rise to toxic symptoms just as in the isolated fœtal adenomata. McCarrison[16] has also shown that in the areas where the goitre is endemic repeated periods of hyperplasia occur during succeeding springs, the gland reverting in the interval to the colloid state.

Under certain conditions the epithelium lining the acini will proliferate, the amount of colloid material will diminish, and the whole gland will become much more cellular. The patient will then develop symptoms of hyperthyroidism, and in this country it is not at all uncommon to find cases of true Graves's disease which have commenced as a simple colloid goitre. Wilson[29] and McCarthy[21] have shown quite clearly that there is a very definite relationship between the amount of hyperthyroidism and the degree of cellular proliferation, so that it is possible to accurately foretell the pathological picture from the nature of the clinical symptoms. Curiously enough, in areas where goitre is endemic true Graves's disease is relatively uncommon, and Eggenberger[5] says that in Switzerland at least half of the cases of Graves's disease are attributable to the excessive medical prescription of iodine. McCarrison[16] also has noted that Graves's disease is rare in regions where goitre is endemic, and in the Himalayan valleys he had seen comparatively few cases in ten years, although the disease was not infrequent among the European residents in such localities.

Ætiology.

An hereditary factor in the colloid goitres is even more marked than in the cases of adenomata, and in my own series it was present in 11 out of 41 operated cases. A further interesting fact has also been noted: there have been several cases in which colloid goitre has been associated with deaf-mutism, and under such circumstances those members of the family who were deaf and dumb also showed goitres, the remaining members being free from both disabilities. McCarrison[16] has laid special stress upon this hereditary factor, and he has found that it is especially common among the Syeds, who, being descendants of the Prophet, are permitted to marry only among their own sect. He states that this factor is much more marked in sub-thyroidic persons than others, for in the true goitre it is difficult to tell what is the effect of heredity because exciting causes which produce it in the parent produce it also in the fœtus or the child. The sex influence is a very marked factor, but it is of interest to note that in endemic areas this influence is only noticed after puberty. In quite young children the sexes are equally affected. In this country the majority of colloid goitres appear in young girls at the age of puberty, although the change may persist until long after this age. In my own series 79 per cent. of the cases occurred in women, and in nearly all of these the onset was between the ages of 15 and 20. The close relationship of the enlargement to sexual changes has long been noted. Not only is the condition much more common at the

age of puberty, but there is a tendency for an enlargement of the thyroid to occur during menstruation and to a greater degree during pregnancy. This is not uncommonly seen in otherwise normal women, but if they are the subjects of goitre the increase in the size of the gland is much more manifest. It is well known that under such conditions there is not only an increase in the size of the gland but there is a hyperactivity, and thus women who suffer from a mild hypothyroidism are always at their best throughout the course of a pregnancy. Occasionally goitres may be found at birth or even in young children. In this country such a condition is rare. Berry[1] found that in his series of 500 cases the youngest were five girls aged 14. In my own series one patient was aged 13 and three were 14. As has already been pointed out, however, in endemic areas congenital goitres are quite common. Among sporadic cases there is very little definite relationship between the presence of goitre in the parents and cretinism in the children. In the endemic areas this relationship is very constant. It has already been mentioned what a high proportion of the Swiss population are cretinoid, and McCarrison has made some very interesting observations in the endemic areas in India. He has shown that cretinism does not occur until the second or third generation of a goitrous family, and that it appears to be more common in certain families, especially those who are ill-nourished. Consanguinity also plays an important part. Curiously enough, males were more commonly cretinoid than the females, the proportion being 5 of the former to 2 of the latter. This relation is still maintained even among cretins who are goitrous, but it is less marked, the proportion being 5 to 4. Forty-four per cent. of all cretins in these areas are also goitrous, but usually the goitre is acquired subsequently to the onset of symptoms of cretinism. Moreover, cretins are more likely to develop goitre than normal children, 70 per cent. over the age of 10 having also a goitre. The importance of the hereditary influence is shown by the fact that a goitre was present in 96 per cent. of the mothers of cretins.

Cause.

The older views that goitre was in some way associated with the geological formation, in so far as it was more common in mountainous districts, have had to be very considerably modified. It was believed that in these areas the water was impregnated with lime and that an increase of this substance was the causal factor in giving rise to the enlargement of the thyroid. These views have now been definitely shown to be incorrect. Endemic goitre is by no means limited to mountainous districts or to limestone formations, and there are many high areas in which goitre is practically unknown. An investigation of the functions of the thyroid is more likely to give a clue to the cause of the enlargement. It has long been realised that the thyroid secretion contains a large quantity of iodine. In 1914 Kendall was able to isolate the active principle in a crystalline form, and he has also been able to prepare it synthetically. He has shown that this substance, which he calls thyroxin, contains 65 per cent. of iodine. When administered it acts very slowly, so that its action does not commence for many hours, and after it has commenced continues for about three weeks. In 1895 Baumann devised his method of measuring minute quantities of iodine in the thyroid secretion. He was then able to demonstrate that the percentage of iodine contained in goitrous glands was much diminished, although in large goitres the total amount of iodine might be above that of the normal gland. De Quervain [4] has shown that if rats are given thyroid secretion they become hypersensitive to an oxygen deficiency. By this means he was able to work out the activity of the various forms of goitre, and he showed that the colloid goitres contained much less active principle than exophthalmic goitres. Eggenberger [5] has pointed out that the iodine in the air and water speedily decreased in passing from the sea coast to the upland interior, and that near the sea there was ten times as much as in Switzerland. McClendon and Williams have also shown that there is an inverse ratio between the amount of iodine in the surface waters and the distribution of goitre. It has thus come to be generally believed that a colloid goitre is due to a deficiency of iodine in the water and food. Such an explanation alone would not, however, account for the much greater frequency of this disease in women and its exacerbation during periods of sexual activity. The work of McCarrison[17] has done much to throw light upon this discrepancy. He has shown that deficiency in feeding has a very marked effect in producing colloid enlargement. Pigeons fed on an excess of fat had an increase in size of the thyroid which was due to colloid excess with little or no increase of the epithelium. If raw onions were added to their diet there was an increase of the acinar epithelium. If the birds were also fed upon cod-liver oil there was a very complete freedom from the development of a goitre. He sums up all his experimental work by showing: (1) That a thyroid hyperplasia is readily produced by the use of a diet deficient in iodine; (2) iodine in minute doses will prevent and cure goitre when administered at the proper time and season. Nevertheless, a goitre will often arise when there is plenty of iodine in the food. In other words, a sufficiency may become an insufficiency under certain conditions. The adequate absorption and assimilation of iodine is influenced by gastro-intestinal infection, and the needs of the thyroid for iodine are dependent upon many factors. Excess of fats, for instance, will increase these needs, but there are many other factors, such as sex, age, puberty, sexual activity, pregnancy, menstruation, infections, seasons of the year, &c. In other words, the goitre is usually due to an inability of the thyroid to avail itself of the iodine which is present, or the iodine is insufficient for abnormal demands.

The importance of infection in increasing the demands of the thyroid for iodine, or in preventing its proper assimilation, has of late had very considerable stress laid upon it. McCarrison has carried out a great deal of work on these lines, and has proved that in many of the endemic areas goitre is due to an infection in the water-supply. He has been able not only to produce goitre in human subjects and animals experimentally, but also able to cure already existent goitres by overcoming the infection which is present. The work of Farrant[6] is also of very considerable interest from this point of view. He showed that the various forms of infection are associated with definite changes in the thyroid gland, the acute infections giving rise to absorption of colloid with infolding of the epithelium and a cellular increase—that is, to a pathological change similar to that found in exophthalmic goitre. This occurs with a bacterial infection, or may be produced in animals injected with a toxin—that is to say, it is an antitoxin reaction. In the later stages, and in the more chronic infections, the gland involutes. Large spaces filled with colloid are formed, which spaces vary in size as new ones are continually being formed. Later on fibrosis occurs, the vesicles are destroyed, the gland becomes cirrhotic, and areas of hyperplasia or fœtal adenomata may be formed. The relationship between these two pathological changes is of very considerable importance, for it will be seen that a goitre of the colloid type may merge into one in which there is a proliferation of the epithelium with consequent hyperthyroidism—that is to say, a simple goitre may pass into the much more serious condition of Graves's disease. The factor which appears most likely to cause this change is the careless administration of iodine. Kocher[14] long ago recognised this, and issued a warning against the treatment of lesions of the thyroid by means of iodine and thyroid extracts. Although the greater part of the evidence at our command suggests that the above is the chief cause of a colloid enlargement, there are certain facts that throw doubt upon it. It has long been realised by surgeons that in those cases where an operation is indicated for the relief of dyspnœa the removal of a

portion of the thyroid either in the form of a wedge resection or as a hemithyroidectomy is, in the majority of cases, followed by a rapid diminution in the size of the remaining portion of the thyroid. This, together with the pathological appearance, which consists of dilated acini with deeply-standing colloid material, suggests that the disease is not so much one of overgrowth and secretion of the thyroid, but rather of a damming up of its secretion within the thyroid gland. This would also account for the fact that so many of these cases show a hypo- rather than a hyper-thyroidism. Acting on this assumption in one case presenting dyspnœa, I operated by making a simple incision through each lobe. It was of interest to see that the operation was followed by a diminution of the size of the gland, which progressed into a complete cure. The progress was, however, so relatively slow as compared with that of a wedge resection, that it was not considered advisable to repeat it.

Symptoms.

The disease, as a rule, commences in this country as an enlargement of the thyroid gland, which is first noticed in girls at or about the age of puberty. At first it is very difficult to determine whether the enlargement is only physiological or pathological, and a large number of female children at this age show a distinctly enlarged thyroid which disappears within a few weeks or months. In fact, the size of the thyroid is so variable in women that it is often difficult to say what is its normal size. As the condition progresses the enlargement steadily increases, until it forms a noticeable swelling with very distinct characters. The whole gland participates, so that the normal outline is maintained. At this stage the enlargement is soft and ill-defined, so that on palpation it may be difficult to determine its exact outline. There is no visible pulsation of the overlying veins, there is little or no increase in the pulsation of the arteries, no thrill can be felt at the superior pole, and the enlargement is not tender. In such cases a family history is common. Children in this stage are often brought for advice because a small swelling has been noticed, and because the mother has feared trouble owing to the presence of goitre in other members of the family. Later the most important symptom is that of pressure upon the trachea. There will be the onset of dyspnœa of varying degree. At first this will only be found upon exertion, but later it may be present when the subject is at rest, and it may often interfere with sleep. Such patients may have severe suffocating attacks, and even a fatal attack, of acute dyspnœa at any time of day or night. Under such circumstances it will be found that the trachea is much flattened from side to side, so that it shows the well-known scabbard appearance. It is well to remember also that in such cases of extreme pressure there is not only a flattening of the trachea, but also a loss of elasticity from atrophy of the cartilaginous rings. The importance of this change lies in the fact that sometimes removal of the thyroid is insufficient to overcome the dyspnœa; the operation may, in fact, allow the trachea to collapse. Berry has laid stress upon this fact, and has pointed out that a tracheotomy may sometimes be necessary after a partial thyroidectomy. In my own experience this has only been necessary on two occasions. After the partial thyroidectomy the trachea was seen to collapse with every inspiratory movement, so that there was valve-like action with complete obstruction.

Colloid goitres, being as they are uniform in size and enlargement, are not usually associated with retrosternal masses, and hence dyspnœa from obstruction of the thoracic inlet does not occur. Later the nature of the thyroid enlargement may alter considerably, and there may appear in it nodular masses, sometimes very numerous, giving rise to the so-called adenoparenchymatous type. Under such circumstances dyspnœa may occur from a lateral distortion and displacement of the trachea, and there may be pressure upon surrounding tissues similar in nature to that occurring with the adenomata. As a general rule, a simple colloid goitre of this variety shows no symptoms of alteration in thyroid activity, or if any such symptoms are present they are more likely to be of the nature of a hypothyroidism. The relationship between this condition and cretinism occurring in the endemic areas has been mentioned. Sistrunk[26] has shown that with this variety of goitre the basal metabolic rate is either normal or a little below the normal, and this even if there were a certain amount of tachycardia and nervousness. At times, but usually only after a colloid goitre has been in existence for a considerable period, there may be evidence of hyperthyroidism. The general symptoms are, as a rule, the first to show the change. The patient will complain of palpitations and will be found to have a rapid heart-beat. She will become nervous and tremulous, and there may be slight exophthalmos. The thyroid will then be found to be much more vascular, there will be pulsation of the overlying veins, and often a thrill at the apex of the upper lobe. In other words, the condition has passed over to one of true Graves's disease. It is of very great importance to recognise the earliest onset of such a change, for under such conditions the administration of any form of iodine or thyroid preparation will be fraught with considerable danger.

At times very curious intermediate changes are found in long-standing colloid goitres which are difficult to explain either clinically or pathologically. The thyroid may lose its soft ill-defined outline and may become hard and sharply defined. In such conditions it appears to be adherent to the trachea and may be mistaken for a malignant change. The progress of the disease will show, however, that there is little or no change, and I have seen one such interesting case where the condition has been maintained unaltered for a period of over three years. In another such curious case the patient showed a large hard thyroid with evidence of very slight hyperthyroidism. At operation the gland was of almost stony hardness. Pathological reports of the removed portions stated there was a diffuse carcinoma, for the thyroid cells were found widely dispersed in the lymphatics. The gland remained enlarged and hard after the partial removal, but the patient commenced to develop slight evidence of myxœdema. The administration of small doses of iodine was followed by a rapid decrease in size of the thyroid until now it cannot be felt at all and the patient is a typical example of myxœdema who has to be constantly controlled by the administration of thyroid extract. The onset of true malignancy in cases of colloid goitre is extremely rare, and I doubt whether it ever occurs unless the gland has previously been the seat of multiple adenomata.

Treatment.

The treatment of this disease is in itself essentially medical. If taken at the correct period the enlargement can probably always be controlled by medical measures. This is more especially the case in young children and where there is some definite factor such as pregnancy. Under such conditions no operation should ever be considered unless there be the onset of some urgent complication. The treatment usually advised is the administration of iodine or thyroxin, and in the endemic areas it has been advocated that one of the iodides should be mixed in very small doses with common table salt and should in this manner be distributed to the general population, or should be given mixed with chocolate to young children. Such methods of widespread administration have, however, several drawbacks. Attention has already been directed to the fact that in the endemic areas such cases of Graves's disease that occur are usually due to over-administration of iodine, and there is unquestionably a very considerable danger in giving this drug if there is the slightest evidence of hyperthyroidism. Moreover, the work of McCarrison has shown that some other factor is often present, and that the administration of iodine alone may be insufficient.

I investigated a series of out-patient cases on these lines, and the results were very interesting. Twenty cases were treated with regular doses of the syrup of iodide of iron and 20 with intestinal antiseptics alone. About 50 per cent. of each group were cured. If the two treatments were combined a further 40 per cent. were greatly benefited, thus supporting McCarrison's view that an excess of iodine may be insufficiently absorbed if intestinal sepsis be present. There is no doubt, therefore, that each case must be considered apart, and that the administration of iodine will have to be combined with attention to the diet and the care in eliminating any form of sepsis and especially intestinal sepsis.

There are, however, certain cases in which surgical treatment is indicated, but it must be remembered that this is always exceptional. The first clear indication is the presence of dyspnœa. Even in such circumstances an operation should only be undertaken if the dyspnœa is sufficient to cause discomfort, if it is steadily progressive, and especially if it interferes with the patient's sleep. The second indication is the presence of multiple adenomata. Since these masses are not true adenomata but are secondary to the general change, an operation should not be performed unless medical treatment has been tried. Moreover, such measures must always be continued after the operation or the condition will recur.

The onset of hyperthyroidism, if it is not controlled by medical treatment, is also an indication for operative treatment. The case will then pass from this group into that of Graves's disease, where the indications for operation will be more fully considered. In certain cases where the disease has existed for a long period and has proved refractory to all forms of medical treatment, an operation may be undertaken as a means of overcoming deformity, but it must be remembered that such cases are exceptional.

In cases of the above type where an operation is essential the same preparation and the same precautions in the use of the anæsthetic will be taken as in cases of adenomata. It was formerly the custom to to perform a hemi-thyroidectomy, removing one lobe and half the isthmus. There are, however, several drawbacks to this operation. If the thyroid is very much enlarged removal of one side only may lead to an increase in deformity of the trachea, and thus may not only fail to relieve but may actually increase the dyspnœa. As a general rule a hemi-thyroidectomy is followed by a rapid decrease in the size of the remaining half of the thyroid, but in certain cases the other lobe may not diminish or may even increase in size. Under such circumstances the deformity is considerably exaggerated, for a lateral enlargement is more noticeable than one that is symmetrical. The operation, therefore, of choice is that of a double wedge-resection combined with division of the isthmus. Free access is gained to the thyroid gland by means of a long collar incision. The pre-tracheal muscles are preferably divided and the whole of the thyroid is exposed. The isthmus is divided down to the trachea and dissected free, so that all pressure upon this structure is removed. Each lobe is grasped by the assistant so as to control all hæmorrhage. A wide wedge with its base anterior is excised from each lobe in turn, and the wide gap which is left is sutured together with a running mattress suture of catgut which controls all hæmorrhage and restores the lobe to shape. The reconstructed lobes are then dropped back into position, a small tube is inserted, the muscles are sutured, and the wound is closed. Should there be multiple adenomata the wedge will have to be modified, and after the elliptical incision is made in front of the enlarged lobe the individual adenomata will be shelled out with the wedge instead of making a clean incision. If there be any evidence of hyperthyroidism or manifest toxic changes an operation of the above type may be associated with too much risk. Under these circumstances there will be less danger, less trauma and hæmorrhage, if a partial thyroidectomy be performed. These cases should, in fact, be treated not as simple colloid goitres, but as cases of Graves's disease. The same preparations will be made for operation, and the same technique will be carried out.

Results of Operation.

The results of operation in this type of goitre are not quite as satisfactory as those of adenomata. This is due to the fact that an operation is only carried out in the presence of some complication, whereas with an adenoma removal is often called for when the patient's condition is quite good. In my own series of 42 cases there were two deaths. One of these was due to the fact that the trachea was absolutely flattened and after removal showed a valvular collapse on inspiration. An attempt was made to overcome this by intubation of the trachea, but the patient collapsed rapidly and died a few hours later. In spite of the danger of infection of the wound I believe it would have been better in this case to have performed a subsequent tracheotomy as giving a freer air entry. The other case showed a considerable amount of toxic change and hyperthyroidism, although the changes were not sufficient for the case to be included among those of exophthalmic goitre. The more simple goitres will usually make very good progress after operative treatment, but should there be any adenomatous masses it is always necessary to carry out post-operative medical treatment or the enlargement will recur and obstruction again become manifest.

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INSURANCE PRACTICE:
A REVIEW WITH CERTAIN CRITICISMS AND CONSTRUCTIVE PROPOSALS.

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THE preparation of this paper suggested itself some weeks ago when the virulent attack was made by a certain medical coroner on panel practice, especially where practitioners were in possession of large panels. Being one who may be classed in that category, I have thought that a brief review might throw some light on a much-abused system. I regret the necessary introduction of personalities.

First it may be pointed out that to a very large extent the routine work of an insurance practice is something new in the annals of medicine. Medical art has more or less in the past been devoted to, if one may use motoring language, the repair of breakdowns; but with the introduction of the Insurance Act, carte blanche was given to any insured person not only to claim the services of his mechanic in a breakdown, but at any time when he thought the car was not in proper tune. There was nothing in the Act to prevent a man claiming Rolls Royce efficiency irrespective of personal abuse or the type of vehicle. Where that could not be obtained, he could grumble about the delinquencies of his mechanic and at the same time suggest that those delinquencies were due to the objectionable system of payment. Further, it is perhaps as well to recall that, previous to the introduction of the Insurance Act, the potentially insured were given to understand that they had merely to report a lack of tune to their medical adviser to draw freely on Insurance funds. As soon as the Act was passed the work of disillusionising them on this point was very promptly and very properly begun; unfortunately, though the politician practised the illusion, the onus of explanation was left to the physician, and too often, when the explanation was not considered satisfactory, the method of payment again came under discussion.

In bringing the work under review real difficulty has been found in fixing some standard on which it could be judged. Obviously, we know next to nothing of what is normal health, or what constitutes a restoration to normal health, for the disappearance of certain disagreeable symptoms does not always mean a status quo ante. On that basis no standard can be fixed. A comparison might be made with the work in private practice, the results in private practice for the time being held out as ideal, but when one comes to realise the number of faith-healing cults, patent-medicine vendors, bone-setters, herbalists, and the whole host of others downwards or upwards to the handy-women with their single box of salve, who had their large clientèle long before the Insurance Act came into force—these, whatever value they may have had, certainly demonstrated that a large number did not find the care of qualified medical men all-sufficient. Comparison is difficult, and more so because failure or transgression in private practice is put down to lack of ability or excusable forgetfulness; under the Insurance Act it is always "the panel." From the fact that the Ministry has asked for a record of the total number of attendances, it would appear that some value is attached to that, but it is the most futile of all standards. It places a premium on eye-service and inefficiency. One consultation of half an hour, where that appears necessary, may be of infinitely more value that 30 of three minutes' duration.

The Standard.

Some standard has been sought within the work itself and the following tests have been applied:—

(*A*) How far (1) loss of patient, (2) permanent disablement, (3) death of patient, may be assigned to (*a*) the system, and responsibility divided between the Ministry and approved societies on the one hand, and (*b*) the art of medicine, and the responsibility divided between the limitations of medical science and personal incapacity or delinquency.

(*B*) How far credit can be given to the system for cure or alleviation of the major illnesses of life acting through the agency of the faculty.

An attempt has been made to present a series of facts in as neutral a spirit as possible and little judgment has been passed, the writer preferring to leave that to others. Where the facts appear personally unfavourable no excuse is offered, for *qui s'excuse s'accuse*. One cannot argue from the particular to the general, but when a series of generalisations are applied to the particular and found wanting, then to a fair mind it suggests the need for revision.

Basis of Review.

Two thousand records of different insurance patients, accumulated during a period of slightly over five years, have been examined. During that time the total number of insured patients on the list has gradually increased to slightly over 2500—the limit fixed in this area—and has been subject to adjustment, a process again necessary. This does not represent the total number who have actually claimed benefit. The work on various occasions has been interrupted through absence and illness, but the interruption has always been to all intents complete; mere triviality of illness has not prevented a record being kept, for anyone caring to investigate primary symptoms will find that trivial illness is an expression very difficult of definition. In Table III. the analysis of disability, where this deficiency from the total actually seen has to be acknowledged, the symbol + has been used to represent a proportionate deficiency from some total figure which can be regarded as a constant, the figures thus retaining a relative value. Where the symbol is absent it may be taken that, as far as it has been possible to ascertain, those are the actual number of cases occurring during the period.

Influx and Efflux of Insured Persons.

There are still 836 persons not indexed since April, 1918, but it is worth noticing that since January, 1920, when a new method of notification was introduced, 845 new patients have been accepted. This would suggest that the total number of persons who have to choose a new doctor in any one year, as compared with the number who might be automatically transferred by change of practitioner, must be relatively large. Those figures could be easily obtained by the Ministry, and would be interesting in view of the injury that the new regulations must sometimes inflict on young men with limited capital seeking to enter general practice.

TABLE I.

Removals from List (304).

Ceased insurance	167*
Left area	81
Transferred by patient's request	33
Transferred at my request chiefly owing to distance	23

* 53 have since attended as private patients.

Analysis of Cases Desiring Transfer (33).

Cause not assignable	9
Chronic illness and unable to give relief	5
New address and distance from surgery probable	5
Refusal to commit breaches of certification rules	3
Opinion resented but still attending rest of family	3
Dissatisfied with treatment of private patient—one family	2
Refused to assist admission to local infirmary, one already discharged incurable, the other infectious	2
Pregnancy, and refusal to induce abortion	1
Four transferences within three years, twice to me	1
Objection to locum tenens	1
Transferred by Insurance Committee on charge of negligence	1

Discontent.

Of the 2000 patients, 304 have been removed from this panel. The various causes for the removals have been analysed partly from the notification slips from the Insurance Committee, and partly from notes on the record sheets, and are tabulated (Table I.).

The number of apparently dissatisfied patients appears trifling, even including the nine* for whom no cause can be assigned, but the number is quite large enough in any area to give the impression of a large amount of discontent. It is surprising to observe over what a wide area one individual can noise his grievance. It does not appear to do any real harm. The average working-man has a great deal of sound logic in his make-up and it is very rarely that he allows his opinion of his medical adviser to be biased by the assertions of others. As individuals we ignore it, and perusal of the list will make it obvious that in certain cases one dare not tell the truth even if so disposed. It is doubtful if panel representatives are wise in giving it more than the most casual of notice.

Freedom of Transfer.

Insured persons have always been at liberty to transfer at any moment desired, without questions being asked. Only once has this rule been broken, and that was owing to insolence backed by threats anent certification. The patient was transferred at my request at the first opportunity. Ill-considered resolutions of panel representatives may ultimately rob the average practitioner of opportunities to display any of the time-honoured professional courtesies.

Record Cards of the Ministry.

When the new record cards of the Ministry were introduced their utility was considered, but so far as personal use is concerned they were discarded for the following reasons: (*a*) The space for observations is too small. (*b*) As they are sometimes transferred locally one has to exercise great discretion as to what one commits to paper. They are not privileged, neither is there any penalty for the divulgence of the remarks on them to the patient. (*c*) Records should still be of value even after the death of the individual, and the records of the Ministry are lost to the practitioner. (*d*) The observations of others are of doubtful value, as they may prejudice unfairly one's views of a patient's symptoms.

Certification.

Certification as a cause of needless friction and interference with medical benefit cannot be fully discussed here. Much has been made of the overcrowding of surgeries, and the following figures are worthy of consideration. The average daily number of patients attending surgery while incapacitated was taken over a period of five weeks. The consecutive figures for an average week were, 4·8; 2; 5; 1; 13·8; 2·6. Subordinate officials are not responsible for this state of affairs, neither can practitioners avoid it. Approved societies and the Ministry must share the responsibility between them. It is not purely a local phenomenon. The whole question of certification should be brought under review by the General Medical Council before support is lent to the complaint of Government departments in regard to the laxity of certification. It is surely possible to devise some form of certificate the signing of which would be compatible with self-respect.

Disability.

To analyse the value of the work Table III. has been drawn up to demonstrate (1) the nature of the disability; (2) operative interference; (3) permanent disablement; (4) death. An analysis of the causes of death in the various age-groups is given in Table II. The causes operating to produce disabilities have received much consideration especially in regard to "responsibility," whether it rests with the individual or to some factors quite beyond his control. In the study of preventive measures it is impossible to ignore this. As one's experience grows so does the impression grow that the accidental has as little relationship to the development of disease as the miraculous has to its cure.

* The number was originally 11, but since commencing this paper, in two cases favourable opportunities have arisen for inquiry, and in both cases, marriage and removal from this neighbourhood was found to be the explanation.

TABLE II.

Analysis of causes of death in age-groups.	Age. 16–25.	26–35.	36–45.	46–55.	56–65.	66 +	Total.
Old age (over 70)	—	—	—	—	—	10	10
Malignant disease	—	—	1	4	3	1	9
Heart, diseases of	—	—	1	1	2	4	8
Phthisis	2	—	2	1	2	—	7
Pneumonia	—	2	—	1	3	—	6
Vascular lesion	1	—	—	1	2	1	5
General arterial degeneration	—	—	—	—	3	2	5
Kidney, diseases of	1	1*	—	—	1	—	3
Unknown	—	—	—	1	—	1	2
Dementia	—	—	—	1	—	—	1
Parotid abscess	—	—	—	1†	—	—	1
Cellulitis and malignant endocarditis	—	—	—	—	1	—	1
Insular sclerosis	—	1	—	—	—	—	1
Tetanus	—	—	—	1*	—	—	1
Huntingdon's chorea	—	—	—	1‡	—	—	1
Total	4	4	4	13	17	19	61

* Died in hospital. † Certified by deputy.
‡ Post-mortem obtained.

In addition, 10 died of influenza during the epidemic, 1918–19. (Vide Brit. Med. Jour., 1919, ii., 519.)

For the purposes of this paper the disabilities have been divided into various types, more or less arbitrary; they suggest that the inter-relationship of those types and the relationship to the history of disease would form an interesting study. Unfortunately, its study is surrounded with many difficulties; a method to overcome some of these difficulties has been devised, but has not been in operation sufficiently long to prove its worth.

TABLE III.

Analysis of disabilities.	Total.	Operations.	Permanent disablement.	Deaths.
Respiratory	805 +	—	—	10*
Alimentary	519 +	25	—	—
Superficial integuments	284 +	4	—	—
Pain without associated symptoms	179 +	—	—	—
Ear, throat, and nose	171 +	8	—	—
Diseases of women	100 +	6	—	—
Muscles, bones, and their attachments	85 +	4	3	—
Circulatory	81 +	—	7	13
Subjective symptoms only	58 +	—	—	—
Disabilities due to war	42	—	2	2
Diseases of heart	37	—	2	8
Eye	34 +	2	1	—
Pneumonia	31	—	—	6
Neurosis, including epilepsy	29 +	—	1	—
Polyarthritis	20	—	—	—
Syphilis	19	—	1	—
Phthisis	18	—	3	7
Tuberculosis other than phthisis	16	5	2	—
Gonorrhœa	15	—	—	—
Genito-urinary, men	14	3	—	—
Chlorosis	13	—	—	—
Pleura	11	1	—	—
Malignant disease	10	2	—	9
Exophthalmic goitre	4	—	1	—
Lunacy	4	—	—	1
Scarlet fever and measles	3	—	—	—
Insular sclerosis	2	—	1	1
Glycosuria	2	—	—	—
Aneurysm	1	—	—	—
Chorea	1	—	—	—
Rodent ulcer	1	1	—	—
Tetanus	1	—	—	1
Huntingdon's chorea	1	—	—	1

* All influenzal.

It is necessary to explain that where a similar illness has occurred in a patient, irrespective of the interval between the attacks, it has been given one value. Violence has not been included. The respiratory type is abnormally inflated owing to the epidemic of influenza which occurred during the period under review. The number was not definitely ascertained; a rough estimate places it over 400.

Glycosuria.—These do not include some cases of very transient glycosuria. Routine analysis of urine is carried out and Fehling tested to excess. Of the two, one is known to have had the condition for over ten years and the other two years. Both can be controlled by diet.

Operations.—From a popular point of view the most satisfactory feature of the work has been the operative. I have the greatest pleasure in recording this fact, as none of the operations have been carried out personally. Of the 25 alimentary cases, 20 have been for appendicitis with 100 per cent. recovery. All showed evidence of inflammatory trouble. The small number of operations for malignancy is surprising. In one or two cases operation might have been possible if diagnosis could have been made earlier, but in two cases where the condition was very early suspected, the suggestion of laparotomy made them go elsewhere. One, a prominent society official, died under the care of a colleague, and the other again called me in consultation four days preceding death.

Additional Advice.—A considerable number have had the advantage of the opinion of consulting physicians or surgeons, and a large number have on occasion sought the advice of colleagues. Not a few have returned to ask me what I thought about it. One man whose only complaint was pain in the great toe and who died from a sarcoma of the pelvis, consulted "nine doctors and four herbalists" and called to give me the opinion of each. As to the more extensive utilisation of specialists, I have found no difficulty in obtaining their opinions as the need arose—through charitable institutions, or through private consultation where the patient could obviously afford it. Too easy access might tend to lower rather than raise the standard of work, and could easily be carried to absurdity.

Improvement of the Service.—Perhaps the ideal system of treatment would be large individual units where a practitioner could be in the financial position to pay for specialised assistants. For obvious reasons this is not a course likely to be favoured by the Government or approved societies. Their desire to increase the number of practitioners in an area and diminish their individual financial resources is sound tactics, and as politics go, one can overlook the assertion that it has anything to do with the question of efficiency or the advancement of medical science. It is more likely to retard it, so that as an alternative the following suggestions are made.

Diagnostic Centres.

Some method should be devised to bring the work of the consulting room into as close a relationship with physiological and biochemical laboratories as exists at the present time between the wards of a general hospital and the pathological department. It is doubtful whether when we fail to attach a name to a particular disability we are dealing with some unnamed disease. It is more probable that we are really dealing with those processes in a history of illnesses which is usually slurred over as ætiology. It is true that under the present method of certification we have to attach a name to those processes, and one can agree with Rowand of St. Andrews, that to do so is demoralising. We can gather the symptomatology of those cases, but the explanation will, I think, in many cases, be found in the laboratory.

While some of us may feel that we are doing better work by spending some portion of each day in the laboratory rather than running up an indefinite number of visits and consultations, we can never hope to be as proficient as the specialised laboratory worker. On the other hand, it must be rare to find a laboratory worker as skilled in the elicitation of symptoms as a skilled practitioner. There is, therefore, a great need for coöperation between the two. One would suggest that diagnostic centres should be opened up where a patient could be admitted for a few days and during that time remain in touch with his practitioner. This would get rid of the odium attached to the suggestion that one was too lazy to diagnose one's own cases. One cannot see the work going on in clinical laboratories without appreciating how much it is required. Its value has still to be proved, and even if proved, it may mean a new race of practitioners before it will come into its own. But a beginning could surely be made on a small scale as an adjunct to teaching centres.

A Department for Medical Research.

Under the Act there has been established a council for medical research, but the suggestion put forward is for the establishment of a department directly interested in the research work carried out in general practice. It may be urged that the amount of such work is now small. That may be true, but it certainly lacks both assistance and encouragement. It is not good that the ambitious young student should feel that by entering insurance practice he is entering an inferior service with a dead end, and a council of men of mature experience and wide sympathies is much required to assist young graduates during those years when the desire for research is strongest. "Much," said Dr. Johnson, "may be made of a Scotchman, if he be caught young," and the same might apply to the general practitioner. The department could become a great reservoir of knowledge, giving advice when asked, and supplying information when desired.

Much that requires investigation will mean research and observation over a life-time, and unfinished work, without such a department, is likely to be lost. While such work might prove of value to those who follow after, yet it might not be considered worthy of publication in the limited space of medical journals. Even that which has been on wrong lines might save some future worker from a similar error. All this must be voluntary, but the resources of the department should be open to anyone wishing to utilise them. The names should not be known to any local committee. The compulsory keeping of records might be abolished; the value of such records must be very slight, and the labour and finance saved might be applied to the purposes of this department.

Halifax.

THE CAUSE OF DEATH IN INTESTINAL OBSTRUCTION.*

BY SETON PRINGLE, F.R.C.S. IREL.,
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THE cause of death in intestinal obstruction is still a subject for debate, and is a problem which has been constantly before my mind during the past 20 years, each year calling out with greater urgency for solution. Three theories have been advanced: (1) Infection—i.e., escape of organisms through the wall of the obstructed intestine, causing peritonitis; (2) absorption of toxins from the obstructed intestine; (3) depletion of systemic circulation and cerebral anæmia. I have frequently asked myself whether one of these three was the correct explanation, or whether each contained part of the truth?

Toxæmia the Most Constant Factor.

As experience increased with years, I found that the infective theory would only account for a very small proportion of the deaths, most cases dying long before there was marked peritonitis, and I gradually came to look on toxæmia as being the most constant—and probably the causal—factor, but many points still remained at issue. For instance, I found it impossible to reconcile with the toxæmic theory the fact of the sometimes rapid death in strangulation where, presumably, the absorption from the strangulated loop cannot be great on account of the obstructed venous return. Can the toxæmia in these cases arise from absorption from the intestine above the strangulated loop—intestine which was in a condition of simple obstruction? Does the factor of shock and reflex dilatation of the portal system occur in these strangulation cases, thus accounting for the greater rapidity of death? Again, is death in peritonitis due to septic absorption, or is it not often chiefly due to the absorption of toxins from the paralysed and distended gut? In the

* Read before the Surgical Section of the Royal Academy of Medicine in Ireland on March 9th, 1923.

absence of time and facilities for experimental work, I recently turned to the very extensive literature on the subject, and I think a résumé of the results may perhaps interest other surgeons.

I found that a tremendous amount of work had been done, chiefly in America and on the Continent, and that, as a result of all this work, two facts stand out clearly and confirm our clinical experience: (1) Peritonitis is not the chief factor in causing death, which often occurs before its onset and almost always before it is extensive; (2) the higher up the obstruction, the more rapidly is it fatal. For example:

Dogs [1] obstructed in the rectum live	.. .. ..	28 days.
,, ,, ,, ileo-cæcal valve live		14 ,,
,, ,, 35 cm. below pylorus live		7 ,,
,, ,, 2nd stage duodenum live	.	2 ,,
Rabbits [8] obstructed in colon live	.. .. ..	10 ,,
,, ,, in lower ileum live	..	4–5 ,,
,, ,, at end of duodenum live		17 hours.

As regards the other results obtained, the weight of evidence is all in favour of death being due to a toxæmia resulting from absorption of a toxin, or toxins, from the obstructed intestine, and the efforts of most workers have been directed towards discovering the site of production, the nature and the source of the toxin.

Site of Production of the Toxin.

The fact being established that the higher up in the small intestine the obstruction occurs, the more rapid is death, the attention of most observers was focused on the duodenum. It has been shown that if the second stage of the duodenum be obstructed,[3] or if a loop of the duodenum be isolated, closed at both ends and its blood-supply left intact,[4] death occurs in a very few days with the symptoms of toxæmia—i.e., dullness and apathy, tachycardia, muscular weakness and tremors, renal suppression, vomiting, temperature disturbances, and fall of blood pressure; whereas a similar isolation of a loop of ileum is compatible with life for many weeks, death occurring not from toxæmia, but from rupture of the loop and peritonitis.[5 6] If, however, the loop above the obstruction be drained externally or into the intestine,[3 7] or if the loop be kept washed out, the animal survives for a much longer period.[8] Again, if the contents of an isolated duodenal loop be heated to 60° C. for an hour, filtered, and then injected either intravenously or intraperitoneally, rapid death with the same symptoms ensues,[4] and, moreover, dogs can be immunised against this toxin by the injection of gradually increasing doses.[9] Again, if the duodenum with the bile and pancreatic ducts be transplanted so that it drains into the ileum, and then some weeks later the jejunum be obstructed high up, dogs will survive for more than twice as long as dogs in which the duodenum has not been transplanted before obstruction is produced.[1]

These results go to prove that the duodenum and its appendages, the liver and pancreas, not only produce the toxin which causes death with symptoms similar to those of intestinal obstruction, but produce it in far greater quantities than any other part of the intestine.

Nature of the Toxin.

The nature of the toxin has not been definitely settled. It is, however, generally accepted that it belongs to one of the groups of poisonous chemical substances produced by the disintegration of protein—e.g., proteoses, amines, neurines, and cholines. Several groups of observers have been able to isolate a proteose in an almost chemically pure state from the contents of obstructed duodenal loops.[10 4 9 1] An injection of this proteose produced rapid death with the train of toxic symptoms already enumerated. The probability, however, seems to be that a whole series of the end-products of protein are present in the obstructed intestine, and are active in producing death.[11]

Source of the Toxin.

In considering the possible source of the toxin three different possibilities have to be considered: (1) food; (2) duodenal secretion, either alone or with the bile and pancreatic juice; and (3) products of bacterial action on the intestinal content. Before discussion of the points for and against each of these possible sources, it may be stated that experimental work has so far failed to demonstrate clearly the origin of the toxin. It is generally accepted that it is not derived from the protein of the food, for it has developed both in a loop above a simple duodenal obstruction produced in dogs that have fasted for many hours,[3] and in an isolated duodenal loop which has been carefully washed out before being closed off.[4] As against bacterial origin for the toxin, many points can be urged—e.g., the higher up the obstruction, the more rapid is death, yet the less is the bacterial content. And, again, the isolation of a duodenal loop which contains few, if any, bacteria, is rapidly fatal, whereas the isolation of a loop of ileum, or even of colon,[12] with their numerous organisms, is not incompatible with life for a long period. Many workers, however, [13 14 15 16] cling to the bacterial origin of the toxin, and advance many arguments in its favour—e.g., it has been shown that the fresh secretion of the normal duodenum from which food is excluded is non-toxic, and remains non-toxic if kept under conditions which inhibit bacterial growth, but if it is incubated with its own bacterial content, a toxin rapidly develops, injection of which causes symptoms like those following the injection of the fluid from obstructed loops.[11]

Others—especially Draper, who has operated on many hundreds of dogs—maintain that the toxic substance is a normal secretion of the duodenum and its appendages, the liver and pancreas; that normally it is detoxicated or neutralised by the jejunal and ileal mucosa lower down, but that in obstruction this is prevented, and that, instead, it is retained in the duodenum, is absorbed, and produces the typical toxæmia. In confirmation of this he showed that when dogs with duodenal obstruction are fed with the mucosa of jejunum or ileum from normal dogs, the obstructed animal survived for twice as long.[17] Others have demonstrated that the toxic contents of obstructed loops which cause rapid death on intravenous or intraperitoneal injection, produce no deleterious effects on injection into the intestine of normal dogs.[18] He therefore believes the toxin to be biochemical in nature, similar to prosecretin.

Subsidiary Factors.

In discussing the nature of the toxin it is of interest to note the close resemblance between the symptoms of acute pancreatitis and those of high intestinal obstruction, especially as it has been shown by the following experiment that the presence of pancreatic secretion in the duodenum is necessary for the production of the toxin. (1) If the duct of the pancreas be tied, and then some weeks later high duodenal obstruction be produced, the dog will live about twice as long as when the pancreatic secretion is reaching the duodenum, and that under these conditions a choline—not a proteose—is found in the loop.[7] (2) Obstruction immediately above the pancreatic duct is much less rapidly fatal than obstruction immediately below.[8] As regards the rôle of the bile, Draper showed that the rapidity of death from duodenal obstruction was not influenced by the presence or absence of bile.[8]

While, as already stated, the toxæmic theory of death is generally accepted, yet there are not wanting those [22 2 19] who hold the third theory I mentioned—namely, depletion of the systemic circulation, dehydration of the tissues, and cerebral anæmia brought about by (*a*) shock, producing reflex paresis of the splanchnic area with engorgement of the portal system; (*b*) hypersecretion of fluid into the intestine, and (*c*) vomiting. These three phenomena certainly occur, but I think that the first—i.e., shock—is the only one which is a real though variable factor in the production of death, and that the other two are a direct result of the presence of poisonous substances in the intestinal tract and circulation. The supporters of the theory point to the markedly beneficial result of the introduction into the systemic circulation of

large quantities of saline, but, taking all the available facts into consideration, I believe this beneficial result can be better explained by considering that the saline acts, chiefly at least, by diluting the toxin in the circulating blood. It has been shown[17] experimentally that injection of pilocarpine for four days, fasting for seven days, or duodenal obstruction for three days, each produces a relatively equal reduction of the quantity of water in the tissues, and yet no serious toxæmic symptoms follow either the pilocarpine injection or the fasting, whereas duodenal obstruction causes death as described above in three days. The only experimental work done on this subject in the British Isles of which I can find a record is that of Wilkie, of Edinburgh.[2] He concludes that the chief factor in producing death is dehydration of the tissues, and he bases this conclusion on the fact that, working chiefly on cats, he was unable to produce death by injecting the contents of obstructed loops into other cats. Another observer[20] has, however, found that although cats develop in obstructed loops toxic bodies similar or identical with those already described, yet they seem to be immune to injection of these bodies, though injection of the same toxic bodies obtained from cats is rapidly fatal to dogs with characteristic symptoms.

Conclusions.

I think we are justified in drawing the following conclusions from all this experimental work:—

(1) The principal factor in causing death in intestinal obstruction is a toxin which is developed chiefly in duodenum, and, although not absorbed from normal intestine, is absorbed under the conditions which prevail in obstruction.

(2) The exact chemical composition of the toxin is still under dispute, but it is almost certainly of the nature of one or other of the toxic bodies derived from protein disintegration.

(3) The exact mode of production of the toxin is also undecided, but probably the presence of pancreatic secretion, and, in a lesser degree, the activities of bacteria are necessary for its production.

(4) While the duodenum is the site of maximum toxicity in obstruction, yet the poisonous substances are developed lower down in the intestine, and it is probable that in the production of these toxins bacterial action plays an important rôle—a rôle which increases in importance the lower down the obstruction occurs.

The value of all this work and the conclusions drawn from it must finally be decided by clinical results. Do the above conclusions hold true if examined in the light of clinical experience? I believe that, for the most part, they do. In the first place, the great majority of surgeons, as the result of clinical experience and quite apart from any experimental work, are agreed that toxæmia is the chief cause of death in intestinal obstruction. Again, all are agreed as to the great benefit of large saline infusions in obstruction cases—a benefit which can be better explained by the toxæmic than by the systemic dehydration theory. Still more strongly in favour of the toxæmia theory is the fact that stomach lavage, useful as it is in all obstruction cases, is most useful in acute dilatation of the stomach. Post mortem, in most fatal cases of this condition, the duodenum is also distended, so that the functional obstruction, whatever its cause, almost exactly reproduces the conditions of many of the experiments on which the toxæmic theory is based, and the benefit of lavage may therefore be explained by the removal of the toxins generated. The same remarks apply to the well-known good results following lavage in those cases, sometimes following gastro-enterostomy, where there appears to be a temporary obstruction (probably functional and due to trauma at the operation) to the on-flow of the gastric and duodenal contents.

However, although I believe that toxæmia is generally the chief factor in causing death, yet I think it is rarely—if ever—the only factor. Nor does this theory explain the phenomena of many obstruction cases, for instance, in the cases of rapid death, which sometimes follow acute strangulation, the toxæmia can only be of minor importance. In strangulation we have two distinct conditions: a closed loop from which the circulation is cut off, and, above that, a part of the intestine in a condition of simple obstruction. Toxins, if formed in the closed strangulated loop, cannot be freely absorbed, while death occurs in some of these cases long before there is time for any great amount of toxin to be developed in the simply obstructed intestine above the strangulated portion. Such deaths must be due to shock. Again, it has been a common experience of mine to find on closely questioning the patients in ordinary cases of strangulated hernia that he or she vomited coincidently with the onset of pain, and then perhaps six or eight hours elapsed before any more vomiting occurred. I believe the early vomiting to be due to the temporary shock, and the later to toxæmia. For these clinical reasons, therefore, I think that shock is a more important factor in causing death than the experimental work leads one to believe, and that in some cases of strangulation it is the chief factor, producing, among other conditions, an engorgement of the portal system.

Finally, I would like to suggest that intestinal toxæmia has a large share in causing death in acute septic peritonitis. I have long believed that the fatal result is not due in most of these cases to the absorption of the products of the suppurative inflammation of the peritoneum—the symptoms preceding death are generally those of intestinal obstruction, not sepsis. To my mind, there are three factors at work in acute peritonitis: (1) shock, (2) septic absorption from the peritoneum, and (3) toxæmia from the intestine, the involved part of which is generally in a condition of paresis, producing obstruction. These three factors must be constantly increasing as the inflammation spreads. I would argue that, if the shock and toxæmia be combated, there is a possibility of prolonging the patient's life sufficiently to give the wonderful fighting powers of the peritoneum a chance of dealing with the infection. I believe that I have saved what appeared to be quite hopeless cases by not only using morphia and saline-glucose infusions to combat the shock and toxæmia, but also by directly attacking the source of the toxin by means of an enterostomy high up in the small intestine. The operation I have performed is after the manner of a Witzel's gastrostomy—a No. 12 soft rubber catheter is inserted into the lumen of the intestine through a small puncture and fixed in position by a single catgut stitch, the next couple of inches are buried in the intestinal wall by a continuous in-folding stitch, and the proximal end is passed through a hole in the omentum, as described by Mayo,[21] before being brought out through the abdominal wall. To the end of the catheter a long tube is attached to drain into a bottle beside the bed. An enterostomy after this fashion allows free escape of the toxic intestinal contents, and, at the same time, permits the introduction of saline and glucose. When the necessity for drainage is over the tube can be removed, and as the opening into the intestine is valvular and the "sealing-off" properties of the omentum have been utilised, little or no escape of intestinal contents occurs, and all excoriation of the skin is avoided.

The results I have obtained by this method are most encouraging, and I am convinced that its use in selected cases is well worth further trial, especially as it is founded on what appears to be a sound experimental basis.

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(*Continued at foot of next column.*)

A CASE OF INSPIRATORY APNŒA IN A NEW-BORN INFANT.

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AND
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(With Pathological Report by
THOMAS W. LUMSDEN, M.D. Aberd.)

WE desire to record the case of a new-born infant in which there were unusual respiratory symptoms, and, as the pathological appearances in this instance were apparently similar to results obtained by Lumsden in experiments on the cat in connexion with the respiratory centres, we deemed it advisable to report the clinical symptoms and the pathological findings of this case in full for the purpose of a comparison.

The Case Described.

Birth.—The mother, aged 25, was delivered of her first child (a male) on March 18th of this year. The infant was two weeks premature. There was nothing of special interest in connexion with the birth, the labour occupying about 12 hours, but with only two to three hours' real pains; the child was born without any interference of any kind and was found to be normal in every way when examined after birth. The head did not show the slightest sign of injury. Although breathing became established immediately after birth the infant looked distinctly cyanosed for a time.

First Attack of Apnœa.—The child appeared to be normal in every way on the first day; it was rather restless on the second night after birth, and on the third day did not appear to be quite well, although so far certainly not definitely ill. About 11 A.M. it was noticed to have a sudden cessation of breathing for a short period with cyanosis, followed by resumption of normal breathing. Artificial respiration was resorted to. Several such attacks occurred at intervals.

Examination: Further Attacks.—When the child was seen by one of us (B. M.) within two hours of the first attack it appeared to be in every way a very fine specimen of a baby. On examination a little rigidity of the right arm and leg was discovered. Shortly afterwards a few twitchings were noticed in the right hand (within half an hour the same thing was observed in the left hand). The breathing at this time was perfectly normal. The child had passed meconium several times, which macroscopically showed no abnormality, and no blood was visible. The little patient had been fed by breast and had also been given Glaxo. Quite suddenly, the infant took a little deeper inspiration than usual and then ceased breathing. Cyanosis soon appeared which gradually became more marked. After about 20 seconds there were two or three short irregular respirations, after which normal breathing became re-established and the cyanosis passed off. During this period there were no convulsions or twitchings. The examination of the patient was then continued. There was no sign of congenital heart disease, nor atelectasis; the air entry into the lung was free and expansion good over all parts of the chest. Nothing of clinical importance was found in the abdomen, pharynx, nose, or neck. There was a very slight yellow tint on the skin, but practically no more than ordinary icterus neonatorum. There were no petechiæ. No increased pressure was felt at the anterior fontanelle. Signs of injury, hæmatoma, meningocele, or any other abnormality were absent. The temperature was normal. No ear discharge was apparent. Urine was freely passed, and the child had passed two motions in the 24 hours.

Within 15 or 20 minutes another attack was witnessed, much similar to the last, with the exception that the attack lasted for about 40 seconds, when breathing was again re-established. During this attack the eyes seemed to slightly point to the right and upwards for a few seconds. The tongue was normal and nothing unusual was seen in the face or position of head.

As the examination of the lungs, trachea, pharynx, and circulatory system elicited nothing to explain the condition, and Buhl's disease being in no way suggested, the symptoms seemed to be due to damage to the brain, most likely of a hæmorrhagic nature in which the respiratory centre was specially affected. The symptoms also suggested that the cortical or subcortical tissues of the left side of the brain were likewise implicated to some extent.

In the event of further attacks the nurse was instructed to perform artificial respiration, give oxygen, and sprinkle cold water on the chest. Tincture of belladonna was prescribed as a stimulant to the respiratory centre. Eight drops of brandy in a teaspoonful of water were to be given between attacks if required.

The infant seemed better for two hours, but then attacks of apnœa appeared again, the respiration ceasing in the inspiratory position for varying periods, with the appearance, as before, of cyanosis, and its disappearance after respiration had become re-established. If apnœa terminated spontaneously, it was broken by two or three short inspiratory gasps; these were succeeded by a further period of apnœa or by normal breathing. There were occasions when the baby slept for as long as one and a half hours at a time, breathing normally and appearing to be quite well. It would then wake up and have twitchings or a mild convulsion which were more marked on the right side. On one occasion, when the baby was lying on its right side, a convulsion began with a movement upwards of the eyes; at the same time the head was lifted from the pillow. When the attacks were over the child seemed exhausted but breathed normally. No definite sequence could be made out between the apnœa and the convulsions, as sometimes the one occurred without the other, while at other times they coincided. Each seemed independent of the other. Later on in the day the convulsions became more generalised and were heralded with a small "meningeal cry."

Death.—When artificial respiration was performed for the apnœa the latter was always cut short and normal breathing quickly re-established. Between the attacks the baby still looked normal. About 8 o'clock on the same day (that is, the third day after birth) the child, having just had a good quiet sleep, became apnœic, but resumed normal breathing with the assistance of a little squeezing. It was apparently lying quietly, its appearance for the moment giving no immediate cause for alarm, when it gave one deep inspiratory gasp and died.

It may be stated that no drugs had been given to the mother either immediately before or during labour, but a few whiffs of chloroform (insufficient to remove consciousness) were administered just before the birth.

An Experimental Parallel.

There have recently appeared some most interesting and cogent observations by Lumsden, who has investigated the respiratory centres in the cat, and his results seem to help materially in the elucidation of this case. In order to make the matter clear we are inserting, by kind permission of the editor of the *Journal of Physiology*,[1] two of his diagrams. He states:—

"The theory generally held is that the automatic respiratory centre is in the lower part of the bulb, and that the regulation of impulses sent out by it is determined by impulses passing to it."

The following are his conclusions:—

1. "In the cat the central respiratory mechanism consists of: (*a*) A part below the striæ acousticæ which when working alone causes gasping respirations. The nerve cells producing this effect may be spoken of as the gasping centre. (*b*) A part at the level of the striæ acousticæ which sends out impulses causing a series of prolonged inspirations. The prolonged inspirations may be called apneuses and the nerve cells producing them the apneustic centre. (Apneusis indicating a holding of the breath in the inspiratory position.) (*c*) A part in the upper pons region which periodically inhibits the activity of the apneustic centre and so produces normal respiration. The nerve cells having this effect may be called the pneumotaxic centre.

2. The posterior corpora quadrigemina have in the cat no appreciable influence on respiration.

[1] Observations on the Respiratory Centres in the Cat, by Thomas W. Lumsden, M.D. (from the Department of Pathology, Lister Institute), Journal of Physiology, vol. lvii., Nos. 3 and 4.

(*Continued from preceding column.*)

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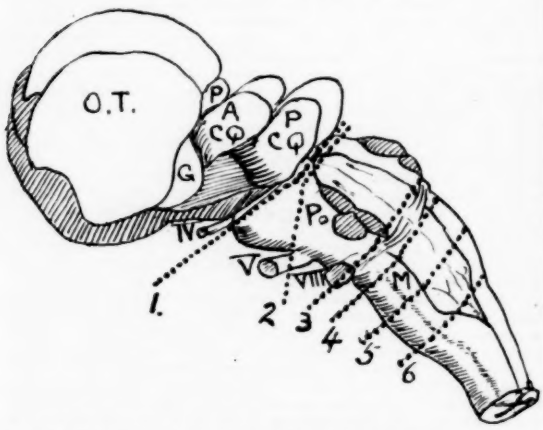
* Draper Maury subsequently changed his name to Draper.

He states further:—

"*Section in the Upper Part of the Pons.*—A section along line 2, Fig. 1, or at any point between lines 2 and 3, causes instantaneously a full development of the inspiratory type of breathing, and this happens whether the fifth and tenth nerves have been cut or not; a slow deep inspiration is taken, and the inspiratory position is held for two or even three minutes. During the last part of the time the muscles relax slowly, and finally give way suddenly. Two or three relatively quick respirations of abnormal type are then taken. Following these there is again a prolonged inspiration and so on. The cycle repeats itself with great regularity for, it may be, two or three hours, but the duration of the inspirations gradually lessens. The blood-pressure tracing taken simultaneously (Fig. 3 in *Journal* but Fig. 2 here) shows that during prolonged inspiration the arterial pressure first rises and later sinks to a low level. It rises again rapidly during the short period of relatively quick respirations."

"Section between lines 5 and 6 causes the cessation of all respiratory movement and death."

FIG. 1.—*Diagram of Brain-Stem showing Level of Crucial Sections (Cat).*



Level 1, just behind posterior corpora quadrigemina dorsally and above pons ventrally; 2, dorsally same at Level 1, ventrally at mid-pons; 3, just above striæ acousticæ; 4, just below striæ acousticæ; 5, half way between 4 and 6; 6, just above angle of calamus scriptorius. The pneumotoxic centre is placed between 1 and 2. Apneustic centre between 3 and 4. Gasping centre between 5 and 6.

Lumsden adds:—

"... When an animal which has been so nearly dead as to cease breathing is revived by means of artificial respirations, the respiration returns in the reverse order (to the effect of asphyxia or anæsthetics on animal dying from same) a preliminary period of gasping is followed by a series of prolonged inspirations which gradually shorten until they become indistinguishable from slow natural breathing, and soon the normal respiratory rhythm is resumed."

Morbid Anatomy in the Authors' Case.

It appeared to us that Lumsden's experiments on the brain-stem of the cat were likely to shed light as to the cause of death of this infant. It was most fortunate, therefore, that he was able personally to investigate the brain-stem of this case.

Report by Dr. T. W. LUMSDEN.—"No signs of purpura were visible. On opening the cranium, the vessels on the pia were found to be much dilated and there were a number of subpial punctiform hæmorrhages both on the convexity of the brain and on the walls of the lateral ventricles. The choroid plexuses were intensely injected. The minute hæmorrhages above-mentioned were entirely superficial and there was no escape of blood into the ventricles. There was nothing abnormal to the naked eye in the regions of the pons or medulla. On section of the brain the grey matter was pinker than usual, even in a new-born baby. The brain was carefully opened and placed in formalin for 48 hours, after which it was examined by slicing it and the brain-stem at intervals of about 1 cm., but nothing further abnormal was found.

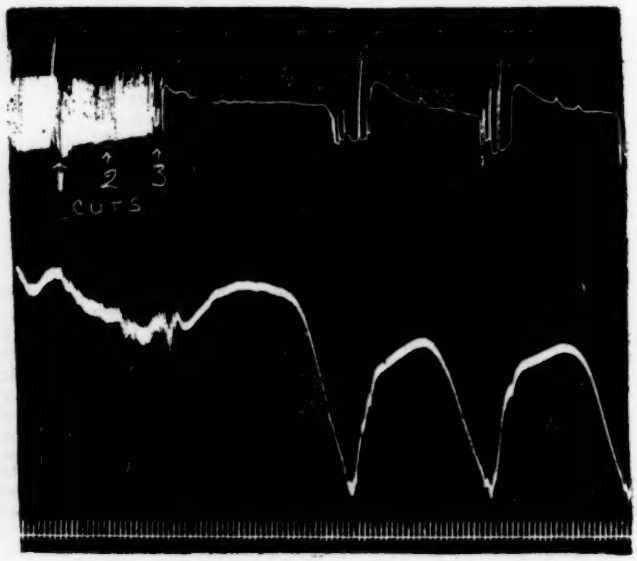
It may be well to state categorically that there was no evidence of meningitis or of gross hæmorrhages into the meninges, the ventricles, or the brain substance. The whole brain-stem and mid-brain, with small portions of the cortex and cerebellum, were preserved for minute examination.

The abdominal and thoracic organs appeared healthy."

Microscopic Observations.—"But for the universal congestion of all blood-vessels, the portions of the cortex and cerebellum examined and the mid-brain appeared healthy. The brain-stem, stained by Bielschowsky's method and counter-stained with acid fuchsin and methylene-blue, was examined exhaustively in serial section. A few very minute capillary ecchymoses were seen in the upper part of the pons and all the capillaries were much dilated, but except in the area just above the striæ acousticæ serious extravasation had not taken place. Into this region—just above the level of the olivary bodies and constituting the lower 2 mm. of the pons—five or six small hæmorrhages had occurred. The largest of these measured 2 × 1·5 × 1·25 mm. At its lower extremity it surrounded the apex of the right olive, and thence extended for 2 mm. upwards, outwards, and backwards towards the restiform body. This hæmorrhage caused damage to the formatio-reticularis, fillet, a small portion of the seventh nerve nucleus, and some fibres of the trapezium. A second extravasation of almost equal size was found in a nearly symmetrical situation on the left side.

Several other minute hæmorrhages were seen at this level in the formatio reticularis and in the restiform body. If one may apply to man the results obtained in cats[2] the hæmorrhages described above would temporarily, at any rate, have the same effect as section of the brain-stem just above the striæ at level 3, Fig. 1, and would determine the onset of the apneustic type of respiration, which is characterised by alternating periods of inspiratory tonus and gasping (Fig. 2).

FIG. 2.—*Respiration and Blood-Pressure Tracings in a Cat.*



Cut 1 was through the mid-brain; cut 2 at section 1, Fig. 1; cut 3 at section 2, Fig. 1. Inspiration upwards abscissa 12 mm. below time tracing (5 seconds).

In a series of ten cats in which the seventh and eighth nerves were severed intracranially, death, preceded by apneustic respiration and convulsions, resulted. That these results were not directly due to severance of the seventh and eighth nerves but to accidental hæmorrhages into the striæ region from dragging on the nerves, was conclusively proved. It was found that these nerves could be destroyed from the external auditory meatus without affecting the breathing, and if great care is taken not to drag on them the

[2] Journal of Physiology, March, 1923.

seventh and eighth nerves can, after removal of the cerebellum, be divided intracranially without causing pontine hæmorrhages or respiratory symptoms.

It is not clear why hæmorrhages occurred in this case, but the feline experiments referred to above indicate that the pontine damage was sufficient to cause death by interference with the respiratory centres situated in the brain-stem above and at this level."

FIG. 3.—*Transverse Section of Brain-Stem just above Striæ Acousticæ.*

1. Largest hæmorrhage. 2. Smaller extravasation on left side. 3. Left pyramid. 4. Transverse fibres of lowest part of pons. 5. Median raphé with many dilated blood-vessels. 6. Right fillet. The unnumbered black spots are distended blood-vessels. Where a white space is seen, blood-clot has fallen out of a vessel or extravasation during section. (Micro-photograph × about 10.)

Reference to Other Cases.

It is interesting to note that Still [3] records five cases of a somewhat similar nature. Four were boys; three were in the fourth to the eighth pregnancy. The attack came on without any reason while the infant was lying quietly in its cot. The onset was silent, without distress, and the infant simply ceased to breathe during the apnœic period. The infant had a healthy colour between the attacks, but there was some cyanosis during the attacks. In one of his cases there were four attacks in one day and two the next, and then the attacks ceased and the child recovered. In another there were six or seven attacks in the 24 hours and these continued to recur for seven days before death took place. In Still's cases one out of five recovered. On two of his cases there were necropsies; one showed some collapse of the bases and commencing broncho-pneumonic process, another case showed extensive atelectasis. He was of opinion that these might just as well have resulted from the condition as have caused the attacks. It seemed to him that the condition was more suggestive of some affection of the respiratory centre than of any secondary asphyxia from any insufficient expansion of the lung.

It is not difficult to imagine how over-lying or even foul play might be suspected in a case of this nature under certain circumstances. Looking back on several cases which have occurred in our experience during the last 25 years, we can recollect a few which had symptoms very similar to those described in the case under consideration. It is not unlikely that such cases are a little more frequent than might be supposed.

Cruickshank [4] draws attention to the pressure of the contracting uterine walls on the infant, also to the effects of accidental hæmorrhage, occlusion of umbilical vessels from twisting or prolapse. He states that the heart, continuing to beat, congestion becomes more marked, and that if no relief be obtained the congestion becomes so great that certain of the smaller vessels give way and petechiæ and capillary oozings appear in various situations. All these effects, he states, may be produced by asphyxial congestion alone, quite apart from the additional trauma of labour. He adds: "It is not surprising to find, then, that in a very large number of cases such hæmorrhages do exist." He is of the opinion that asphyxial congestion is the most usual factor in producing hæmorrhage, the pressure of the maternal passages being also very important, while "injuries due to abnormalities of presentation or to operative interference occupy the third, though still one of the important places in the ætiology of these lesions." We quite agree with Cruickshank that probably many infants with quite extensive birth hæmorrhages are born alive and survive, some perhaps to die from broncho-pneumonia and other common childish disorders later on.

Summary.

The important points are: The mother is a healthy primipara, aged 25, who enjoyed excellent health during pregnancy and labour. The labour was comparatively easy and natural. No drugs were given her; a few whiffs of chloroform just before the birth of the child only. There is no similar case in family. Cyanosis was present at birth, but passed off.

There was no asphyxia neonatorum. The infant was well formed, showed no abnormalities, and looked healthy. It took its food well and passed meconium and urine without trouble. There were slight although definite changes noted in the infant within the first 24 hours. These gradually increased in intensity.

Definite attacks of apnœa before the infant was two days old. Heart, lungs, air-passages normal. Twitchings and then convulsions. The infant looked well, and was of good colour, between attacks of apnœa; the cyanosis was only present during attacks. The effect of artificial respiration in cutting short the attacks.

Death within 12 hours of the first appearance of apnœa. The total number of attacks must have been more than a dozen.

Were the convulsions due to the slight changes found on the cortex cerebri or to respiratory failure? The clinical symptoms suggested an affection of the respiratory centre, yet at the necropsy there was comparatively little evidence macroscopically. Indeed, if it had not been for Thomas Lumsden's recent observations in the cat no further investigations would have been proceeded with.

The demonstration by Lumsden of hæmorrhages in the pons which first affected the pneumo-taxic and later the apneustic centres, causing death from respiratory failure. No changes were found in the heart or lungs post mortem. There were no signs of purpura.

The existence of greater frequency of hæmorrhages in the new-born, which was shown by Cruickshank, than has probably generally been entertained and therefore the likelihood that tiny hæmorrhages into the pons are perhaps not so infrequent in new-born infants as most observers believe.

That hæmorrhage into the pons is doubtless an unrecognised cause of death in certain infants.

Taking Still's reported five cases this one makes a fatality of five out of six.

It will be interesting to note if the after-history of cases which recover from this condition show demonstrable changes in the central nervous system.

The necessity of keeping the apnœic attacks in mind in deaths in newly-born infants thought to be due to over-lying or foul play.

The treatment in a definite case would appear to consist of artificial respiration and the use of oxygen during the attacks; keeping the child quiet and seeing that the bowels are kept properly open.

The prophylactic treatment obviously commends itself in the prevention of undue cerebral congestion

[3] G. F. Still: Attacks of Arrested Respiration in the New-Born, THE LANCET, 1923, i., 431.
[4] J. N. Cruickshank: The Hæmorrhages of the New-Born, THE LANCET, 1923, i., 836.

from too prolonged a labour on the one hand and the avoidance of undue interference on the other. Even most careful steering between Scylla and Charybdis would probably not prevent some cases; possibly there is an innate peculiarity of the blood-vessels in them. Again, we know that some infants who have suffered from fairly bad asphyxia neonatorum show no abnormality later in life. It would be interesting to hear the views of others who have had similar cases.

Our thanks are due to Dr. Lumsden for the great help he has given, not only by his observations on cats, but by his investigations in this case.

THE MODE OF TRANSMISSION OF MALARIA:

A HYPOTHESIS ADVANCED BY RICHARD PFEIFFER IN 1892.[1]

BY C. M. WENYON, C.M.G., C.B.E., M.B., B.S., B.SC. LOND.,

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OF the various conjectures on the mode of transmission of malaria which were made prior to the work of Manson and Ross, and the actual demonstration of the mosquito cycle of the parasite of this disease, that of Richard Pfeiffer appears to be the one most logically argued, most accurately deduced, and nearest the truth in the light of subsequent discoveries. Pfeiffer's remarks appear to have been entirely overlooked, probably because they were included in a paper dealing with another subject. The accuracy of Pfeiffer's reasoning is remarkable. It was based on the knowledge gained from a study of the common coccidium of the rabbit, and the scientific mind of Pfeiffer realised the possibility of the parasite of malaria having a similar life-cycle which completed itself, not on the ground in a protective oöcyst, but in the body of some blood-sucking invertebrate which might inoculate the germs thus produced into human beings. The similarity of the reproductive phase of the coccidia in the epithelial cells which they destroyed and that of the malarial parasite in the red blood corpuscles, together with the absence, in the case of the malaria parasites, of any resistant stage which could compare with the oöcysts of coccidia, led Pfeiffer to the view that in some blood-sucking insect lay hidden the secret of the transmission of malaria.

During the years 1889–90 this observer occupied himself with a study of the common coccidium of the rabbit. His paper, illustrated by excellent microphotographs, was published in 1892, and forms a landmark in our knowledge of these parasites. Hitherto it had been assumed that the sporulation of coccidia in the epithelium, and that in the oöcyst after it had left the body, represented two distinct parasites. To Richard Pfeiffer is due the credit of having first demonstrated that these were merely phases of one and the same organism. Sporulation in the epithelium led to multiplication within the host, while that in the oöcyst had to do with the spread of infection to another animal. The resistant oöcyst protected the parasite during its development outside the body. To Pfeiffer the endogenous sporulation of coccidia and malarial parasites were alike, while the absence of an oöcyst in the latter suggested the possibility of the exogenous cycle taking place while protected by some insect's body.

The following is a fairly literal translation of the final paragraph of Pfeiffer's most interesting and important work on the coccidia of the rabbit:—

> As a result of the discoveries of Laveran, Marchiafava, Celli, and Golgi, it is known that in malarial fever the red blood corpuscles harbour characteristic motile amœboid bodies which increase in size, bring about destruction of the occupied cell, and then, at regular intervals, as a result of segmentation associated with the formation of a residual body, produce numerous young individuals, which in their turn always give rise to a new generation of blood parasites. So far all is clear. But how does the parasite gain entrance to the human body? It is possible to produce the fever in healthy men, as was first shown by Gerhardt, by the injection of small quantities of blood from a person suffering from malaria. Without going into this matter further, it is clear that under no condition can this be the normal mode of infection. On the other hand, all epidemiological experience indicates a close connexion between marsh-fever and special conditions of the soil. The first and most evident idea was that in some way the blood parasite concerned was present in the soil or in the water of the infected locality, and that it attacked man as a result of inhalation or by way of the digestive tract. But all investigations which have been conducted along this line have remained without result. This is no longer surprising since we have learnt that the blood parasitising protozoa are extraordinarily delicate, and are entirely unsuited for a free life in the outer world. Grassi's hypothesis that the widely distributed amœbæ of marsh water enter the blood of man, transform themselves into malarial parasites and, as a result of adaptation to the existing conditions, lose their power of existing as free living organisms, is based on so forced a supposition and receives so little support from experiment, that it does not indicate a way out of the prevailing difficulty. How then is the undoubted dependence of malarial infection on environment to be explained? The following solution suggests itself, but I bring it forward only as a hypothesis, the justification for which rests in the fact that it indicates a line of investigation. It is possible that in the case of the malarial parasite also there exists an exogenous phase, a developmental cycle which completes itself outside the human host, possibly in the body of a lower animal (as, for instance, certain insects) and possibly also, in part at least, in the soil. This exogenous malarial germ could then be conveyed to man through the air or water, or as Robert Koch has remarked to me, through the sting of blood-sucking insects.

The reasoning is so sound, and has been so completely justified by subsequent investigations, not only on the life-history of the malarial parasite itself, but also by the discovery of the close relationship which exists between malarial parasites and coccidia, that it seems worth while to call attention to Pfeifler's remarks.

[1] Pfeiffer, R. (1892): Beiträge zur Protozoen-Forschung, I. Heft Die Coccidien-Krankheit der Kaninchen, Berlin.

Clinical and Laboratory Notes.

THE PROVISION FOR EXPIRATION IN ENDOTRACHEAL INSUFFLATION ANÆSTHESIA.

BY I. W. MAGILL, M.B., B.CH., B.A.O. BELF.,

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THE value of endotracheal insufflation anæsthesia for operations in the region of the head and neck is too well known to require any comment. In certain cases, however, particularly those in which the method is specially indicated—namely, operations involving the lower jaw and mouth—lack of adequate provision for expiration may, by its effect on the patient, interrupt the course of a smooth anæsthesia or embarrass the work of the surgeon.

(1) With regard to the patient, partial respiratory obstruction due to the falling back of the tongue, pressure on the lower jaw, or other cause, may produce a form of hyperpnœa with laboured expiration, consequent congestion, and increased hæmorrhage at the site of the operation.

(2) With regard to the surgeon, to operate under the full force of the patient's anæsthetic-laden expirations is at least unpleasant. When there is bleeding into the mouth or upper air-passages the additional accompaniment of a spray of blood is unlikely to assist either his temper or his technique.

These effects may be counteracted in many instances by means of a firm-walled rubber tube of sufficient calibre passed into the pharynx through the mouth or nose, according to the site of the operation, and con-

nected to a further short piece of tubing by a metal elbow. Movement of the patient's head by the surgeon, however, or pressure on the lower jaw, may cause obstruction of the pharyngeal end of this tube at any time with some of the undesired effects described above. The satisfactory results obtained by passing an expiratory tube into the trachea alongside the catheter have led me to adopt this procedure where possible in every case in which endotracheal insufflation is the method of choice. Expiration as well as inspiration is brought directly under the control of the anæsthetist, and the pharynx can be as effectively plugged as desired.

When the mouth is available for the administration, catheter and expiratory tube can be fastened together and passed in one manœuvre. When the nose is the available channel, the catheter is passed through one nostril and the expiratory tube through the other, each being picked up in the oral pharynx with a forceps for the purpose[1] and passed into the trachea by direct vision. A suction pump is used in conjunction with this method to maintain a clear field when there is bleeding into the mouth or nose.

The course of the anæsthesia when conducted in this way is, in my experience, smoother than when a catheter alone is used, and its advantage to the surgeon is obvious. I understand that double channel catheters are used in some continental clinics, but in this country I have been unable to obtain any of sufficient (double) calibre for the purpose.

Sidcup.

ACUTE KETOSIS DURING PREGNANCY.

BY J. HARGREAVES ROBINSON, L.A.H. DUB., L.M.R.C.P. IREL.

THE following case of acute ketosis of pregnancy is of interest by reason of its sudden and acute onset, and the happy issue under appropriate treatment.

A primipara, aged 32, during the seventh month of pregnancy developed a rapidly increasing anasarca in a few hours. Previous health excellent. Urine: amber colour, reaction acid, sp. gr. 1010. Albumin, trace; sugar, nil. Symptoms quickly increased in severity. There was cough due to œdema of the larynx, aphonia, lethargy, fibrillary tremors, pain and stiffness of the joints, irregular respiration during sleep, almost of the Cheyne-Stokes type, large circumscribed patches of transient erythema, severe stabbing pains in the hepatic region, sour taste, odour of acetone from the breath, spongy gums, sordes, ocular phenomena, which are now subjectively described as "something like the effect produced by opening the eyes under water and seeing for an instant moving shadows." Unilateral œdema of the face after sleeping on the side. Fœtal activity.

I am indebted to Dr. Cronin Lowe for the following report on the urine: Albumin present, but too small a quantity to estimate; reaction acid; acetone present; diacetic acid present; urea, 0·77 per cent.; ammonia, 0·15 per cent.; ammonia coefficient, 1 to 5·1. Centrifuged deposit: Pus cells, a few; blood cells, nil; casts, nil; epithelial cells present.

The clinical condition increased in severity, and Dr. Leith Murray passed bougies into the uterus to induce labour. On removal of the bougies the membranes were ruptured, and six hours later Dr. Philip Vickers delivered with forceps without an anæsthetic. Two sutures (20 day chromic catgut) were inserted into the perineum; they dissolved out on the fifth day, and left a peculiar depressed areola about ¼ in. in diameter at the site of insertion. Sodii bicarb. ¼ lb. was given during the three days preceding delivery. The following were also given: Calcium lactate ½ drm. daily; ol. ricini 2 oz. at the onset of the condition; 12 hours later sodii sulphas ½ oz., and subsequently 1 drm. doses three-hourly; rectal salines. The urine became alkaline four days after delivery. The infant (weight 5 lb. 6 oz.) showed transient patches of erythema during the first week after birth. In consequence of the small capacity of the stomach at birth the infant was fed two-hourly on undiluted cow's milk, with sodii citras 3½ gr., gradually increased to 6 gr. in each feed. Eleven feeds in the 24 hours. Body-weight at 14 weeks, 13 lb.

The mother's recovery was uneventful.

Southport.

[1] Magill, I. W.: Brit. Med. Jour., 1920, ii., 670.

BRONZED DIABETES:

ITS REACTION TO DIETETIC AND INSULIN TREATMENT.

BY E. BOSDIN LEECH, M.D. CAMB., F.R.C.P. LOND., HONORARY PHYSICIAN, MANCHESTER ROYAL INFIRMARY.

THE origin of bronzed diabetes is still unknown. The case here recorded was not diagnosed till after death, and during life the patient received the modern diabetic treatment as carried on at the Manchester Royal Infirmary. It is of interest to see how he responded to that treatment.

A male, aged 47, was admitted to hospital on May 5th, 1923, with acute diabetes of three months' standing. During life there was no definite skin pigmentation and the skin was sallow or possibly slightly icteric. From May 9th to June 12th he was treated dietetically on the lines of the Allen treatment. May 9th to 11th, preliminary diet; 12th to 15th, fluid (starvation) diet. On this the sugar disappeared. The caloric value of the food was then gradually raised, but sugar appeared on the 18th (with 327 cal.), 22nd (360 cal.) lasting four days; June 4th (952 cal.) and 8th (952 cal.). The blood-sugar results during this time were: May 9th 0·2816 per cent., 29th 0·1968 per cent.; June 10th 0·2816 per cent. About the last-named date the patient developed œdema and ascites, and it was evident that he was not going to improve with simple dietetic treatment. It had not been possible to train him up to take even 952 calories daily. Insulin was therefore given, 15 units daily, 10 at 8.30 A.M. and 5 at 6.30 P.M. A diet was given with caloric value 2183, later reduced to 1683. With this a trace of sugar persisted. Numerous blood-sugar estimations varied from 0·0625 on the first day of insulin treatment to 0·2062 on June 19th.

The patient never showed any improvement with the insulin, but became weaker, more emaciated, and more water-logged. On June 25th he refused food and the insulin was of necessity discontinued. He died on the 27th.

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

MATERNITY AND CHILD WELFARE GROUP.

A MEETING of this group was held on July 3rd at 117, Piccadilly, W., Dr. H. K. WALLER, the retiring President, being in the chair.

In the absence of Prof. E. MELLANBY, DR. ERIC PRITCHARD opened a discussion on the

Feeding of Infants between the Ages of 1 and 5 Years.

He said that during the last ten years more important discoveries had been made as regards diet than in the previous 10,000 years. The present knowledge was derived chiefly from animal experimentation, since many generations of animals could come under observation, whereas the difficulty of working with humans was that the results of indiscretions were not shown in one generation; in vitamin deficiency, for example, it might take long before any change was noticeable. At the beginning of the study of scientific dietetics energy value of food was alone regarded as important, on the analogy of the needs of a machine. This analogy was true in many respects, but no machine was able to repair, enlarge, modify, or reproduce itself, and if some were made to lubricate themselves they could not, at any rate, clean, stimulate, and protect themselves against external injuries. The human body was required to do all these things and diet had to provide much besides energy value. Milk was an adequate and sufficient food for the human body for the first 12 months of life. The biological value of proteins was now known to differ greatly, and attempts made to classify foods on this basis resulted in a table in which meat stood highest,

followed in order by milk, wheat, lentils, beans, and maize, which had a biological protein value only one-third of that of good meat. This might account for the pellagrins in certain parts of America and elsewhere if maize was the staple diet. Besides biological value mineral elements were important; too much attention had recently been centred on vitamins, which were no more essential than iodine or soda. The depletion of alkali reserve, which could be restored by mineral matter in organic combination, was responsible for much ill-health, which a more liberal allowance of fruit would cure. E. V. McCollum in a recent book had given three elements of a safe dietary: (1) Milk; (2) small-leaved green vegetables and fruits, for their salts, bases, and vitamins; and (3) offal, of which the biological protein value was much higher than, for example, that of fish. The real essential was not to concentrate on any one aspect of the subject, but to plan a diet bearing in mind energy value, balance, salts, vitamins, and also digestibility and favourable distribution of meals.

Dr. WALLER raised for discussion a particular point in the dietetics of young children—viz., the place occupied by cow's milk in the rearing of infants at and shortly after the weaning age. He suggested that if a certain prevalent view is correct, then the baby is unique among young mammals in requiring prolonged milk feeding long after its own mother is capable of the task. For delicate children and for those short of proper nourishment milk is an invaluable remedy. But he held that large numbers of working-class parents, who give their children little or no cow's milk after weaning, show that healthy infants can be reared in this manner. He raised the question for two reasons. The first was that he thought the secret of this type of feeding was worth examining in view of its obvious success. The second was that it differed radically from the manner of feeding commonly prescribed by doctors and nurses for children in the nurseries of the well-to-do—often with an equally obvious lack of success. There might well be a danger that, owing to the growing authority of the infant welfare movement, this tendency to prolonged milk feeding of the young might be too rigidly imposed on the class of parents attending infant clinics with certain disadvantages. He feared a repetition of the unfortunate situation which occurred when two-hourly breast-feeding was widely ordered only to be laboriously cancelled when its drawbacks were appreciated. He wished to emphasise that he referred to children in good health at the normal weaning age, not to invalids or those who could not get food. For these latter types the artisan parent's view that milk is an excellent medicine is correct. But he believed we should keep this medicinal aspect in mind and not lose sight of the fact that an alternative, and biologically a more natural, diet can be framed.

Dr. H. SCURFIELD, who was elected President of the group for 1923–24, spoke of the varied opinions of well-known pædiatricians on a diet suitable for young children. One considered bananas indigestible, another objected to raw tomatoes and cucumber for children under 7. Dr. Scurfield's own children had all eaten cucumber before they were 2. In contradiction to Dr. Waller's views, McCollum had tried to show that the physique of races who had lived on dairy produce for thousands of years was better than that of others. McCollum's estimate of the amount of milk that should be consumed daily by an adult was a quart; Mellanby suggested a pint. In connexion with vitamins, Dr. Scurfield referred to Dr. W. Cramer's researches,[1] and said that experiments on feeding poultry confirmed his conclusions as to the beneficial results of a diet especially rich in vitamins. The fact that no variation in the composition of human milk was noticeable in tropical climates rather spoilt the theory that milk was adapted to the child's needs under all circumstances; in this case one would expect the fat content to be lessened in hot climates. Dr. Scurfield drew attention to the high temperatures to which milk was subjected in the process of making Devonshire cream, which might be said to be made from pasteurised milk.

Dr. MABEL BRODIE drew attention to the fact that in many districts the mothers could not afford to buy cow's milk or dried milk for infants who had been weaned. Many young children could not digest uncooked vegetables, and few were given any meat until between 4 and 5. She asked when normal children should first be given meat.

Dr. MAITLAND RADFORD said that the assumption that milk was necessary for young children was of great administrative importance, exemplified by Ministry of Health orders. The Ministry paid half the cost of giving away a considerable amount of milk to expectant and nursing mothers and children under 5. If Dr. Waller's theories were correct, they might do much better with the money.

Dr. H. P. NEWSHOLME asked how mothers were to be instructed. Of recent years research had increasingly emphasised the value of green vegetables and the use of cereals as a main source of diet was being deprecated. The question was not yet decided, however, whether the older method of feeding was practicable in modern times, or even beneficial nowadays. The increase in consumption of cereals by a town population was dependent on their easy carriage, whereas fresh country produce was difficult to convey. Cereals were not ideal foods, but were useful in energy content and could easily be supplemented by "safety" foods.

Dr. C. L. WILLIAMS (Todmorden) said that Gowland Hopkins's "Law of the Minimum" had crept into a few text-books, but it was not generally realised how wide were the possible variations in acceptable dietaries. Dogmatism at this stage of our knowledge must be avoided. The essential elements in diet could be bought for a few pence and the rest could be chosen to suit individual taste. For example, there was nothing particularly evil about fish and chips as an article of diet, but when children were given fish and chips only protest must be made.

Dr. MARY KIDD contended that milk could not be dispensed with, and attributed our C 3 population to the tardy effects of under or defective feeding of children. The action of the Ministry of Health in providing milk should not be discouraged, though Dr. Waller's views should be borne in mind.

Dr. E. H. T. NASH (Isleworth) pointed out the difference in nutritive value and digestibility between bananas and plantains.

Dr. STELLA CHURCHILL said that since medical men had not interested themselves in the matter of the diet of healthy young children until recent years, much could be learnt by observing the way of tradition. An important point was to give children what they liked to eat. If greens were given early enough children liked them, also meat, chicken, or fish, but they did not as a rule like milk or suet puddings. Tomatoes, cucumbers after the age of 2, and eggs were better than cereals.

Reply.

Dr. WALLER pointed out that he did not doubt the enormous value of milk for delicate children. In his opinion statistics showed that it was a mistake to keep children on a fluid diet.

Dr. PRITCHARD said that he thoroughly agreed with Dr. Newsholme's remarks. One after another cheap food was being discarded or excluded from dietaries because it contained no vitamins; this was ridiculous since vitamins could easily be supplied separately in concentrated form, as in fruit juice, cod-liver oil, and marmite. Separated milk was an excellent foodstuff properly supplemented. The discrediting of Marylebone cream, in spite of its acknowledged energy value, on the count of absence of vitamins appeared to him pure folly. "Get your cheap vitamins somewhere else, but don't condemn good foods" was Dr. Pritchard's concluding message.

[1] THE LANCET, 1921, ii., 1202; Ibid., 1923, i., 1046.

Reviews and Notices of Books.

ENCYCLOPÆDIA MEDICA.

Second edition. Vol. IX., Mammillaplasty to Obesity. General Editors, Vols. I.–VIII., the late J. W. BALLANTYNE, M.D., C.M., F.R.C.P.E.; Vol. IX., ALEXANDER GOODALL, M.D., F.R.C.P.E. London and Edinburgh: W. Green and Son, Ltd. 1923. Pp. 672. 30s.

Dr. J. W. Ballantyne, who edited the first eight volumes of the second edition of the Encyclopædia Medica, died in January last, and this regrettable event has, we are informed, delayed the appearance of this volume. The references in many of the articles are, indeed, not to very recent work, though the spirit of most of them is modern. The publishers announce that they were able to secure the editorial services of Dr. Alexander Goodall, for the completion of this and the remaining volumes of the series, of which the publication is expected to be completed next year. Vol. IX. maintains the standard of previous instalments. Notable among those articles revised by the original authors are those on Forensic Medicine, by Prof. Harvey Littlejohn, on Infections of the Nails, by Dr. George Pernet, on Occupation Neuroses, by Dr. Wilfred Harris, and on Acute Inflammations of the Nose, by Mr. Herbert Tilley. It is natural that auto-revision should give the best result, for the introduction of a revising hand, although essential in certain cases, can hardly fail to alter, though perhaps very slightly, the point of view of the original writer. Specially successful, however, is the revision by Dr. C. B. Ker of the section on Epidemic Cerebro-Spinal Meningitis by the late Sir William Osler, and that by Dr. W. A. Potts on Mental Deficiency, written by Dr. G. E. Shuttleworth. New articles are those on Military Surgery, by Sir D'Arcy Power, Mycetoma, by Major W. S. Patton, I.M.S. (ret.), and Neurasthenia, by Dr. Ivy M'Kenzie. We regret that the list of principal articles in the volume, with the names of authors or revisers, is not supplemented by an index of the authors of short articles on subjects of smaller range though by no means necessarily of less importance. Some of these shorter articles, notably one on Masturbation, appear to be most admirable summaries of the subject dealt with, and since the views expressed are not free from controversy, an indication of the name of the author would give confidence to those who hold the same opinions. This is almost the only omission in an admirable volume.

CLINICAL DIAGNOSIS OF INTERNAL DISEASES.

By LLEWELLYS F. BARKER, M.D., LL.D., Professor of Clinical Medicine, Johns Hopkins University. In three volumes. London and New York. D. Appleton and Co. 1923. Pp. 2908. £5.

THESE three volumes originally formed part of a series of six, entitled Monographic Medicine, published in 1916. In a foreword it is stated that they have been republished separately in response to "requests from various quarters." The first feeling produced on looking through the republished volumes is curiosity as to what could have formed the subject-matter of the remainder; for Prof. Barker takes all medical knowledge for his province, even including in his monograph conditions such as ringworm and chronic mastitis, which hardly seem to merit the designation "internal." In an introduction, written in 1916, the author points out that the present-day physician, or "internist" as he prefers to call him, is, or at any rate should be, engaged in "attempting to visualise clearly the functional pathological processes that are the essence of disease." His aim in writing has been to supply information as to methods and procedures available for following these functional pathological processes. This involves the description of the means employed in the investigation of cases in all the fields of medicine, an undertaking of such vast extent that it is amazing that one man should have been found capable of attempting it. That Prof. Barker did attempt it single-handed was due to his belief that "the problems of selection of matter for such a work as the present are such that they can best be met by one man, provided that he has had large clinical experience, some years of laboratory training, and has always been in close touch with clinical workers." Such a man—we had almost said superman—the author would certainly appear to be, and in 1916 the present work must have been nothing short of prodigious. The whole field of diagnosis was covered, so far as it had then been mapped—roentgenology, bacteriology, hæmatology, biochemistry, and biophysics; with all of them the author displayed an equal and astonishing familiarity, and laid before his readers the fruits of the latest work. But that was in 1916, and now it is 1923, and the volumes have apparently been reprinted without further comment, without withdrawal or addition, and with no reference under seven years' old.

Perusal of the work to-day is, in some respects, encouraging. It serves to convince that in spite of cavillers, medicine, so far at any rate as diagnosis is concerned, does move. Prof. Barker's work was in the very forefront of the advancing tide in 1916; in 1923 that tide has flowed far beyond. No doubt it has carried a good deal of worthless flotsam with it, but it has also borne many things of real value. Among these may be mentioned the newer knowledge of the accessory food factors and their relation to the deficiency diseases; the recognition of the curative powers of the actinic rays of sunlight in rickets; the more recent methods of estimating the sugar in the blood, which have made it possible for even the general practitioner with some biochemical training to distinguish true diabetes from the various glycosurias and to follow the condition of his diabetic patients as never before; the simplified urea tests for the gauging of renal functions; the estimation of thyroid overaction or deficiency by observations on the basal metabolism—and the list might be prolonged a good deal further.

It is justifiable to question the wisdom of Prof. Barker in allowing his book to be reprinted even in response to the urgency of its admirers until he or someone else had brought it up to date. It would be unkind further to insist upon the lapses of omission and inclusion incident upon the production in 1923 of a work completed in 1916, and apart from these nothing but matter for admiration remains in Prof. Barker's book. The descriptions of all the well-established clinical methods are excellent. In his zeal for more modern methods the author has not neglected the older modes of investigation, and his description of physical signs of all types and descriptions are masterly. On the main clinical features of every disease he may wish to investigate the practitioner or student could have no better guide than Llewellys Barker.

MEDICAL DIETETICS.

Vorlesungen über Diätbehandlung innerer Krankheiten. Fourth edition. By Prof. H. STRAUSS, Berlin Jewish Hospital. Berlin: S. Karger. 1922. Pp. 471.

Prof. H. Strauss's volume, which has reached a fourth edition, gives in the form of 17 lectures a thoughtful and thorough exposition of the principles which should guide the physician in prescribing food in the commoner diseases. The dietetic treatment of alimentary disorders naturally takes up a good part of the volume. But circulatory and kidney diseases, gout, diabetes, obesity, infectious diseases, and post-operative diets also receive full attention. The tables of analyses at the end are exhaustive and are cast into a useful form, giving the calories, protein, fat, carbohydrate, and water in 100 g. of each food, both raw and as served at the table. Special mention must be made of the valuable appendix of hints for the dietetic kitchen by Elise Hannemann. This contains nearly 100 pages of good recipes; and of

each the composition and the food value are stated. The author rightly asserts that for the dietetic treatment of constipation an exact diagnosis is of first importance. The causes are various; and loss of the power of expulsion is seldom one of them. The delay may be due to atony, to spasm, or to weakness of the abdominal walls, and may be complicated by stenosis, by mucous colitis, or by piles. We notice that the use of X rays to determine the actual nature and seat of the delay is not mentioned. For the spastic forms of constipation a diet calculated to render the motions soft, but poor in cellulose, is advised. It would contain little or no meat, abundance of fruit juices and jellies, honey, whey, buttermilk or sour milk, milk-sugar, lævulose, olive oil, paraffin or agar-agar. For the torpid forms of constipation the usual wholemeal bread, salads, and fruits are recommended. In mucous colitis the cellulose-poor anti-constipation diet is first tried, and later, if needed, a cellulose-rich diet as advocated by v. Noorden.

In speaking of diet in kidney disease Prof. Strauss lays stress on the fact that in many cases of nephritis there is no demonstrable impairment of renal function. There may be a harmless "anephritic" albuminuria. The quantity of albumin is not indeed of value as a guide to the severity of chronic nephritis; neither has diet such a definite influence upon it as was formerly supposed. He doubts also if small quantities of spices and condiments have any adverse effect on the kidney. The reader cannot fail to note Prof. Strauss's practical acquaintance with the phases and consequences of starvation. The copious details offer an arresting contrast to the pre-war literature of a few references to special fasting experiments. We may hope that Europe will see no more of hunger-osteopathy and hunger-œdema. In treating sub-nutrition exercise is valuable. Weak and very thin patients should begin their treatment in bed, but the muscles must be kept in condition by massage, faradisation, and exercises. In the chapter on diabetes the various methods of dieting are discussed in general terms, but few specific instructions, such as the doctor really needs, are given. The analyses of foods are stated in percentages as a rule, though there is one useful table which gives the weights of various foods containing the same quantity of carbohydrate as 10 g. of white bread. A great deal of calculation would be needed to prescribe an accurate diet from these data, much of which can be avoided by the use of tables such as modern English and American text-books on diabetes supply. There is in other chapters also a general tendency to enunciate the principles and to limit the practical application to giving lists of foods to be taken or avoided in the various disorders. The value of these lists would be increased greatly if they were more often supplemented by a detailed account of an actual day's food. The vitamins come in for little attention. Indeed, apart from a discussion of the classical deficiency diseases of scurvy, scurvy-rickets, and beri-beri, the author does not deal with them in detail. He speaks also with caution about the recently expressed view that calcium deficiency is a cause of diseases such as asthma, hay fever, and certain catarrhs.

This is a wise book, a little conservative perhaps, but full of sound experience and knowledge, and free entirely from the dogmatic empiricism which creeps so easily into works on diet.

THE NERVOUS CHILD.

Second edition. By HECTOR CHARLES CAMERON, M.A., M.D., F.R.C.P., Physician in Charge of the Children's Department, Guy's Hospital. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 224. 7*s.* 6*d.*

WE like to think that this little book, now appearing in a well-merited second edition, is a product of the English mind and the English spirit. It lies poles asunder from the dreary nastiness of some more ambitious productions emanating from other sources and ostensibly dealing with the mental life of the nervous child. Through its pages runs an illuminating ray of common-sense and medical wisdom which is no less pleasing than instructive. Our children are largely what we make them. In several passages Dr. Cameron rightly lays the emphasis, not on infantile or juvenile experiences per se, but on the attitude of parents and nurses to these. In showing their own apprehensions, and communicating them, they sap the confidence of the child. He declares in no unmeasured terms that for the treatment of childish neuroses psycho-analysis has dangers and produces ill-effects far outweighing any presumable advantages to be gained from it. Management rather than treatment is the keynote of many of his chapters, prevention rather than cure, nursery hygiene rather than specialists' consulting rooms. It is a book to place without reserve in the hand of intelligent parents, governesses, and nurses, no less than in that of the practitioner of medicine; its general tone of optimism is reassuring and cheering; its outlook is sane and healthful, its quiet humour comforting. The insight shown by Dr. Cameron into the mind of the child reveals the profound student of his subject.

DIE LUMBALPUNKTION.

Anatomie, Physiologie, Technik, Untersuchungsmethoden, diagnostische und therapeutische Verwertung. By Dr. MARTIN PAPPENHEIM, Privatdozent in the University of Vienna. Vienna: Rikola Verlag. 1923. Pp. 184.

IN the course of the last ten years a number of text-books dealing with the cerebro-spinal fluid have appeared, but since the subject is one to which research is constantly being devoted, finality has not been reached; new methods come into vogue, new discoveries are announced, new diagnostic procedures are elaborated, with embarrassing frequency. Dr. Martin Pappenheim's brochure represents the very latest advances in all that concerns the fluid. The work is stronger on the chemical than on the microscopical side; Chapter X., on qualitative cell-examination, might be amplified with advantage, and would in any case be improved by drawings of the cell types enumerated. This little book should be in the hands of every laboratory worker, and the clinician will appreciate its usefulness in spite of its admittedly technical character.

LEHRBUCH DER NERVENKRANKHEITEN.

By H. OPPENHEIM. Seventh edition, revised and enlarged, by R. CASSIRER, K. GOLDSTEIN, M. NONNE, and B. PFEIFER, in collaboration. Berlin: S. Karger. 1923. Vol. I. With 323 illustrations and 4 plates. Pp. 923. 27*s.*

GERMAN neurology suffered a grievous loss by the death of Hermann Oppenheim on May 23rd, 1919. It is no mere figure of speech to say that he left behind him a monument of enduring value in his classical text-book, which now appears in a seventh edition, revised and enlarged by four distinguished German neurological confrères. Dr. Cassirer undertook the responsibility of preparing this latest edition, though he says in his preface that with the passing of Oppenheim no single worker could supervise the whole of the field of neurology without help. Hence the collaboration already noted. Oppenheim's book is a treasure-store of neurological knowledge. Scanning its familiar pages again one does not know whether to admire most its comprehensiveness, the skill with which an overwhelming amount of detail is marshalled for assimilation, or the personal touch which runs like a thread through the whole. A cyclopædia of this kind is of permanent importance; it is the outcome of a love of scientific truth which oversteps all national and racial boundaries. We may hope that generations of neurological students who never knew Oppenheim in the flesh will keep his memory green by their appreciation of the best book on the subject that has ever been written.

THEORIES AND PROBLEMS OF CANCER.

By C. E. WALKER, Associate Professor of Cytology in the University of Liverpool. London: University of Liverpool Press and Hodder and Stoughton. 1923. Pp. 126. 5s.

IN this small book the author has brought up to date a series of articles written for Science Progress in 1912. It is addressed to the intelligent layman as well as the more professional public, but we fear that few of the former will be able to understand it, for Prof. Walker fails to realise the width of the gap in thought and terminology which separates him from his neighbour in tram or bus. For the latter it provides a rather gloomy review of those aspects of the cancer problem which have most interested the author. He writes as one wandering hither and thither in a dark forest, not as a happy and adventurous pilgrim who knows that the golden age is just round the corner. It is surely superfluous sadness to belittle the experimental study of transplantable tumours because it has not revealed the cause and cure of cancer and to neglect the great fundamental advances in our knowledge of its nature which have been achieved by this method by the Imperial Cancer Research Fund and others, and which, as far as can be imagined, could have been made by no other means. And it is a simple assumption to say that work in other directions would have been of far greater value. Plenty of people have worked at cancer in other directions and, to say the least, have found out no more. In detail we may note that the criticism (p. 88) of the view that too hot food and drink may cause cancer neglects the mechanism of swallowing as well as the very striking evidence from China connecting the excess of epitheliomas of the lower end of the œsophagus in males with the habit of the women waiting to eat till the men have finished. The statement (p. 52) that all the symptoms and damage done by malignant tumours are due to pressure or some other mechanical action on the surrounding parts is hardly in accord with clinical experience of cachexia.

The book contains much that is of interest, and though experienced workers may find but little stimulation in its pages, no thoughtful attempt to unravel such a tangled skein as the cancer problem should be disregarded, and we commend Prof. Walker's book to those who are engaged in working at cancer from whatever aspect.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY. June, 1923. R. Foster Moore: A Watertight Suture in Trephining. It is generally acknowledged that the localised cystic swelling sometimes seen after trephining is undesirable, and that the result to aim at is a more diffuse subconjunctival œdema, showing that the excess fluid from the globe has free drainage into the subconjunctival space. To obtain this desirable result Foster Moore completes his operation by carefully suturing the edges of his conjunctival incision, thus preventing the sealing down of the lateral parts of the conjunctival flap which takes place if the fluid is allowed from the first to find an exit through an unsutured conjunctival incision.—The late Charles Killick: Treatment of Conical Cornea. Finding the recognised methods of surgical treatment unsatisfactory, Killick has had recourse to a simple extraction of the lens with a subsequent needling operation to form a vertical slit in the capsule. By this means he succeeded in improving the vision of one patient from less than 6/60 to 6/24. As a conical cornea necessarily causes high myopia it is perhaps surprising that this procedure has not been tried before.—R. P. Ratnaker: Blue Cataract. The blue dots sometimes seen in the lens by focal illumination do not interfere with vision very much, and they seldom progress into a condition calling for operation. It therefore seems a pity to use the word cataract. The author suggests that some other word, less alarming to the patient, should be found for all non-progressive opacities of the lens.—C. H. Bryant: The Third Dimension in Monocular Vision. Stereoscopic vision is popularly supposed to be impossible with one eye. Bryant suggests that it is attained by the unconscious comparison of the image which falls in the macula with the more or less blurred images of objects not in the direct line of vision, and this theory seems altogether probable. "An experimental proof of this is readily made by viewing the landscape through a series of opaque tubes of increasing calibre. In proportion as the field viewed is made more extensive and more objects are seen in it, so does the sense of depth become more evident."

JOURNAL OF INDUSTRIAL HYGIENE. May and June, 1923.—In the May issue D. A. Coles contributes a short but useful article on how to report an industria accident which may result in a compensation claim. First there must be proof that an accident has occurred. Next the present condition, including parts of the body not involved in the accident, should be accurately noted. Then a statement should follow of incapacity caused and prognosis of its temporary or permanent character. If the doctor is immediately on the spot, a plan of the scene of the accident with measurements should be made, and evidence of those present should be taken. Legal proceedings would often be simplified if doctors would remember they may have to become witnesses, which they usually forget while attending to the injured person.—The causation of industrial accidents is dealt with by H. M. Vernon, who, as the result of extensive investigation, concludes that fatigue may cause a moderate increase of accident-frequency when the hours of work are very long; but that during the course of ordinary work-spells fatigue has little to do with any increase of accidents, which is chiefly due to variations in speed of production and the psychical state of the workers. He found accident-frequency at a minimum at 67° F., increasing rapidly at lower and higher temperatures; thus it was 35 per cent. greater at 52° and 23 per cent. greater at 77° than at 67° F.—An important paper by P. Drinker, R. M. Thompson, and S. M. Fitchet, dealing with atmospheric particulate matter begins in May and is completed in the June issue. The authors give an excellent summary of previous work on the subject, although Owens's new jet counter was apparently too recent to be considered. The errors which are involved in various methods used to determine the dust present in air are pointed out. The authors then describe a new apparatus for which high efficiency is claimed. Dusty air is passed through water at 8 to 10 cubic feet per minute; entrainment losses are avoided by spiralling the exhaust air out of the collector and thus changing its direction; a vacuum cleaner motor-fan, which is equipped with a rheostat for speed control, serves as the source of suction; while an orifice meter at the exhaust measures air-flow.—In the June issue H. C. Weston reports an investigation into the efficiency of linen-weavers, which was found to vary directly with wet-bulb temperature; but after 73° F. was reached efficiency fell as the wet-bulb temperature rose. As a working maximum a wet-bulb temperature of 70° F. is suggested to ensure maximum production consistent with health and comfort. Efficiency under artificial light fell below its daylight value by 11 per cent.; to avoid this fall good general as well as local illumination is required. Reasonable reduction in hours of work appear to favour the production of a uniform work-curve without a proportional reduction in total output.—M. C. Sturgis, after inquiring into the effect of dysmenorrhœa among working women, concludes that the great majority of women suffer no appreciable loss of efficiency during the menstrual function; 65 per cent. experienced no handicap, 30·6 per cent. only slight handicap, but 4·4 per cent. were seriously affected. Methods for overcoming any lowered efficiency are put forward.

MENTAL HOSPITALS SERVICE.

TWO SCOTTISH HOSPITALS.

IN the annual report for 1922 of the *Glengall Hospital for Mental Diseases, Ayr*, the medical superintendent, Dr. G. Douglas McCrae, protests against the delay which occurs in committing patients to mental hospitals for treatment. Excluding congenital cases, 61 per cent. of the men and 48 per cent. of the women had exhibited symptoms of mental disease for more than a year before being sent to this hospital for treatment—in the case of one woman three years, in another 12 years, and in a third 20 years, had elapsed. Scarcely 9 per cent. of the men and only 16 per cent. of the women were admitted within three months of the onset of the mental illness. With regard to physical health, the proportion of cases seriously exhausted on admission was unusually high at 45 per cent. among the men and 50 per cent. among the women; this index of the hospital nature of the institution ought to appeal to all but the indifferent and unconvincible among the general public. Dr. McCrae regards some of the stereotyped predisposing causes of insanity with a respect which is tempered with some amusement. "Among the causes of the mental illness in those admitted, hereditary predisposition was acknowledged in 30 per cent., as usual. While it may be correct to affirm that no man can become insane unless he be constitutionally 'nervous,' who can truthfully assume, however confidently he may assert, that no case of mental disease has ever occurred among his ancestors? Not even the brain in the Piltdown skull could claim such immunity." "Notwithstanding that the incidence of alcohol is steadily decreasing, a high annual admission-rate is maintained. It is not alcohol that fills the asylums, but it does serve to indicate those who ought to be in the asylum, where the alcoholic degenerate is a *rara avis*, though a well-recognised species amongst the general community." A remarkable item in the statistics is the supply, from the gardens, of 1084¼ lb. of parsley in one year to an institution providing food for not more than 600 people.

The annual report for 1922 of the *Glasgow Royal Asylum* records the acquisition of two new buildings, one of which is being used as a nursing home for incipient cases, and one, which occupies an attractive position overlooking the Firth of Clyde, as a convalescent and holiday home for patients in the hospital. It is also hoped to build a new nurses' home in the near future. An original step has been taken in appointing an instructor in occupational therapy; this is said to be the first example of such an appointment in a hospital of this kind in Scotland. Among the subjects on which research work is in progress are the part played by focal infections in insanity, the blood-sugar content in states of depression associated with anxiety, and the effect of spinal drainage, reinforced by giving mercury and arsenic, in organic disease of the nervous system (exact particulars of this work are not given). The medical superintendent's report embraces a discussion of the part played by alcoholism in the production of insanity. "My general feeling is," writes Dr. D. K. Henderson, "that alcohol as a cause of mental disorder is of great importance, but very frequently also it is merely a symptom, and points the way to a more definite and profound underlying cause. Under these circumstances I think that purely prohibitive measures will never succeed, because the question is not so simple as to be dealt with in such a crude way." The only satisfactory solution, he concludes, is to attempt to produce better conditions of life, and to study the individual and environmental conditions which are at the bottom of this habit disorder.

TWO PRIVATE MENTAL HOSPITALS.

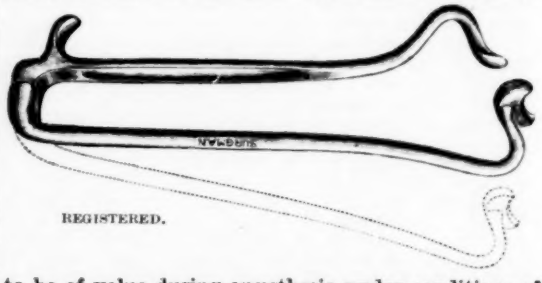
In the annual report of *The Retreat, York*, Dr. Henry Yellowlees, who has succeeded Dr. Bedford Pierce as medical superintendent, maintains a tradition common to several such institutions in contributing a long and very readable superintendent's report, dealing with a number of questions of general interest. Similar points are raised by Dr. Arthur Townsend in the annual report of *Barnwood House, Gloucester*. A remarkable feature of the year's work at The Retreat was the high proportion of voluntary boarders admitted, no less than 46 per cent. of the total number of patients. The proportion at Barnwood House was much smaller, and Dr. Townsend deplores the difficulty of widening the scope of the voluntary status. He cites the example of a voluntary boarder whose condition for the time being became such that, by the present standards, certification was inevitable. Within a fortnight she was well. The problem of providing occupation for the patients is another subject which is engaging the attention of the authorities at both of these hospitals. Games and gardening have always figured largely at The Retreat, and a new social venture is represented in "Harbour Lights," a magazine edited and very largely written by the patients. There is room, however, for more work of a different nature, the whole being systematised under the control of an officer whose time is devoted solely to this purpose. This is the end in view in each case, and Dr. Townsend suggests the possibility of "classes of instruction" in various arts and handicrafts.

At Barnwood House there is some prospect that the nurses may be engaged under stricter form of agreement. In spite of good conditions and relatively high payment, a number have been leaving before their course of instruction has been completed. It is desirable that mental nursing as a career should be brought more generally to the notice of the public; the difficulty experienced in staffing mental hospitals is due chiefly to ignorance, either of the nature of work, or of its mere existence as a career. "It seems strange that while so much is done for the nursing of the sick, so few should be willing to devote themselves to the care of the insane, which is the highest and most difficult of all nursing. . . . To do it well requires high qualities of head and heart; and there can be no better or worthier sphere for those whose desire it is not merely to gain a living, but to be at the same time 'continually doing good.'" This quotation, reproduced by Dr. Yellowlees, is from an annual report for 1875. In his words "it is even more fully true to-day than when it was written almost 50 years ago."

New Inventions.

A MANDIBLE RETRACTOR.

THE accompanying illustration shows an instrument devised during the war for pulling the mandible forward under an anæsthetic. This retractor has proved



REGISTERED.

to be of value during anæsthesia under conditions of impeded respiration, and where it is necessary to advance the mandible. In the first instance the instrument was devised for cases in which the mandible had been fractured and originally it was made from iron wire. It has now been in use for some years, and has proved so useful that others may be glad to avail themselves of the pattern made from it by the Surgical Manufacturing Co., Ltd., Mortimer-street, London, W. 1.

London, W. W. WARWICK JAMES, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JULY 14, 1923.

SMALL-POX AND VACCINATION.

WE printed in the last issue of THE LANCET the official figures giving the notifications of small-pox for the preceding week in England and Wales; those of the following week, bringing the account up to June 30th, have now been published, and are quoted in a statement with regard to the small-pox situation which has been issued from the Ministry of Health and appears on p. 92. This statement dwells in the first instance on the failure at Gloucester to control the disease when control would have been easy. There were cases of small-pox in the city as far back as April, and official warning was received from the Ministry of Health by the sanitary authority early in May that in other cases occurring in distant localities the source of infection had been traced to Gloucester; but notification by local practitioners was refused by the medical officer of health, in the view, presumably, that the diagnosis was in error. The question as to whether the disease was in fact small-pox was finally settled by expert advice, both official and other, when the local authority was immediately assisted, under the superintendence of Dr. W. H. DAVISON, senior assistant to the medical officer of health at Birmingham, to set up a special hospital and special vaccinating stations, to trace contacts, and to do everything possible to stamp out the infection locally, and to prevent its further spread.

The statement from the Ministry of Health, which includes figures proving that the incidence of small-pox is at present widely spread in the country, is uncompromising in its recommendation of vaccination as the only practical remedy now that the infection has been introduced. No one denies that the decline of small-pox, as of most epidemic diseases, is influenced by a rise in the standard of the sanitary conditions and the economic opportunities of the population, but no serious student of epidemiology can doubt that in vaccination we have a practical method of controlling further spread of this disease when an outbreak has occurred. The value of universal compulsory vaccination and revaccination would be well worth discussing in the light of all the information now available and outside the murky atmosphere of dialectics. For the moment it is happily an academic question for the greater part of the country, and even admitting that the influence of vaccination is neither individually infallible nor permanent, this need not impart a hesitating quality into our advocacy of the procedure in face of a local outbreak of disease. The outcome of the frank views of the Ministry of Health is believed in some quarters to be the prelude to amendment in the law, but Mr. NEVILLE CHAMBERLAIN has expressed his belief that no special legislation is necessary.

OPERATIONS FOR DISEASE OF THE GALL-BLADDER.

THE surgery of the biliary tract is passing through the stages which have characterised the evolution of surgery of other abdominal organs. The perfecting of technique by specialist operators has shown the general practitioner how, in case of need, intervention in gall-stone disease may be undertaken with a moderate assurance of an immediate happy outcome. The result is that, rather prematurely perhaps, this branch of surgery is being practised by a large number of men, before knowledge has become sufficiently exact to indicate in all cases the proper course to follow. It is pertinent, too, to remember that the available and reliable statistics are those of the most experienced surgeons who, in their writings, characteristically fail to lay stress upon that perfection of technique which has done so much to furthering their favourable results. For these operators, biliary surgery has passed beyond the stage of developing a technique of intervention to that of deciding what procedure will best meet the existing pathological and physiological processes at work in each particular patient, so that, amongst them, controversy centres round the advisability of cholecystectomy or cholecystostomy, when gall-stones exist without complications. There seems to be a growing conviction amongst operators of experience, not only in this country, that the end-results of cholecystectomy are very much better than those of the simpler cholecystostomy. At a recent meeting of the Royal Society of Medicine, where the surgery of the common bile-duct was under discussion, Mr. JAMES SHERREN emphatically declared that "when the correct treatment for disease of the gall-bladder is carried out," meaning cholecystectomy, "we shall cease to have to discuss and carry out operations for the removal of duct calculi." In other words, his experience has led him to the conclusion that the recognition of early cholecystitis should be followed by removal of the gall-bladder.

Cholecystectomy is, indeed, being very widely practised just now. It must be accepted as a fact that a large percentage of favourable results ensue when they are vouched for by the leaders of gall-bladder surgery, but it is relevant to ask whether we have not travelled too far in this direction; whether, with a more careful selection, certain gall-bladders which are now sacrificed might not be preserved to play their part in the physiological economy of the individual. The fact that patients from whom the gall-bladder has been removed show few signs of being different from normal people, demonstrates no more than the marvellous powers of adaptation the body possesses, for there is abundant evidence that the organ has very important functions to perform. After the gall-bladder has been removed, either there is a varying but constant flow of bile into the duodenum, or, should the sphincter of Oddi remain continent, a dilatation of the bile-ducts behind it, in order to accommodate the dilute bile which is no longer reduced to one-tenth of its volume by gall-bladder activity. In either case the physiology of digestion is disturbed. Achylia occurs in 47 per cent. of cases of gall-stones.[1] In dogs cholecystectomy gives rise to achylia. It has also been found associated with a stone impacted in the cystic duct, which suggests that it is due to loss of gall-bladder function. Some observers, on the other hand, have demonstrated that in man the gastric juice may show normal acidity after removal of the

[1] Rydgaarde: Arch. f. Klin. Chir., 1921, cxv., No. 3.

gall-bladder. How can these results be explained? Very possibly they depend upon the behaviour of the sphincter of Oddi, which cannot be predicted. If it remains functional, so that the flow of bile into the intestine is intermittent, then gastric secretion may take place as usual, but should a continuous flow of bile occur, then secretion of the pancreatic and gastric juices is much diminished. The digestive disturbances after cholecystectomy, which are familiar to surgeons of experience and recognised as occurring in a certain proportion of cases, are probably due much more to these causes than to the adhesions which are blamed, but are often not found on re-exploration. If the sphincter of Oddi remains continent after cholecystectomy, the greatly increased pressure against which the liver has to secrete leads to dilatation of the common and intrahepatic ducts, and must surely be disadvantageous to this organ in the long run, just as the kidneys cannot indefinitely secrete against pressure without harm coming to them. When it is remembered that the liver is the largest gland in the body, that it is the great metabolic laboratory of the organism, this consideration cannot lightly be set aside.

A powerful argument in favour of cholecystectomy is the view that the gall-bladder is the place of origin of the majority of gall-stones. Doubt has been thrown upon this belief by AUFRECHT,[2] who states that in atrophic cirrhosis, in the neighbourhood of carcinomatous nodules, and when damming back of bile has occurred during pregnancy, liver-sand is often found in the smaller bile-ducts. The relief of pressure at parturition allows a free flow of bile again, and the discharge of the sand down the ducts is the cause of the biliary colic seen after child-birth. This observer believes that gall-stones arise in the liver and grow in the gall-bladder, so that the removal of the gall-bladder does not necessarily mean the extinction of the focus of origin of gall-stones. E. A. GRAHAM[3] established the constant association of hepatitis with cholecystitis, and the work of M. G. PETERMAN[4] has demonstrated what the connexion is. He found that if streptococci were injected into the portal vein they could be detected in the wall of the gall-bladder and in the substance of the liver, although the cystic duct and artery had been previously ligated, and that they only appeared in the gall-bladder wall subsequently to their appearance in the liver. Infection took place by connecting lymphatics. It is true also that in early cholecystitis the outer layers of the wall of the gall-bladder are more affected than the mucosa. It therefore seems to follow that the origin of cholecystitis is really in the liver substance. This does not mean that cholecystectomy is a fundamentally wrong operation. It may quite well be that infection in the liver tends towards cure of itself, whilst restitution of the gall-bladder walls to normal is difficult of achievement.

In the light of such recent work, the after-history of patients who have been submitted to cholecystectomy requires careful reinvestigation, with a view to making a true comparison with patients submitted to cholecystostomy, where the gall-bladder appeared at operation to be capable of recovery. Although the mortality of cholecystectomy has been much reduced by modern methods, it remains a more serious operation than cholecystostomy, so that an attempt to restrict its field of application is desirable. To remove a gall-bladder is a confession of failure to attain the ideals of surgery in this region of the body—namely, a restoration to normal function, although it seems from present available evidence to be unusually effective in bringing relief to a large proportion of sufferers.

[2] Deutsch. Archiv f. Klin. Med., 1919, cxxviii., 242.
[3] Surg., Gyn., and Obstet., 1918, xxvi., 521.
[4] Surg., Gyn., and Obstet., 1923, xxvi., 522.

THE PRACTITIONER'S RIGHT OF APPEAL.

LAST month we received from the Welsh Board of Health a formal notice that after an inquiry, held in accordance with Part VI. of the Medical Benefit Consolidated Regulations for 1923, the name of a qualified and registered practitioner had been removed from the medical list for the county of Glamorgan. Similar notices reach us from time to time from the Ministry of Health. Four years ago, at one of the annual conferences of local medical and panel committees a resolution was passed to the effect that no medical practitioner should be deprived of the right to continue in insurance practice without the liberty of appeal to an independent judicial administrative body or court other than H.M. Insurance Commissioners or the Ministry of Health. Dr. J. H. CLEMENTS, who recalls this resolution in our correspondence columns, regards the negotiating body as having been lax in allowing the new agreement for service to go through without establishing this principle of the right of appeal or, as he himself would perhaps more vigorously put it—though this issue is a secondary one for our present purpose—as having claimed the victory whereas they had sold the pass.

The complete facts are not very easy to come by, but the position apparently is, that there is no appeal to the law courts for a practitioner whose name is being taken off the list as a result of such an inquiry as we have alluded to, although under Section 7 of the Nurses Registration Act of 1919 a nurse threatened with having her name removed from the Nursing Register may appeal to the High Court; under Section 9 of the Dentists Act of 1921 a dentist has a similar right of appeal, and under Section 4 of the Midwives Act of 1902 a midwife also has the corresponding right. Why the same facility of appeal was not laid down in the National Health Insurance Acts is not quite clear, although obviously removal from the panel is not so serious a disability as removal from the Register, to which appeal refers in the case of nurses, dentists, and midwives. The Medical Benefit Consolidated Regulations of 1923 make it clear that the panel practitioner has no right to have a special case stated on questions of law arising out of inquiries under Part VI. Part V. of these Regulations, which contains the provisions relating to disputes, appeals, and so forth, does indeed apply (Art. 35) certain scheduled sections of the Arbitration Act, 1889, to "any appeal made to the Minister under these Regulations against a decision of a Committee," and Section 19 of the Regulations runs: "The Minister may at any stage of the proceedings on an appeal, and shall, if so directed by the Court or Judge, state in the form of a special case for the opinion of the Court any question of law arising in the course of the appeal." But this Section 19 was omitted from the 1920 Regulations and is still omitted in 1923, just as in 1920, with the result that there is no right of appeal for a practitioner whose continuance on the list has been made the subject of an inquiry under Part VI. The omission does not trouble the great majority of practitioners who would prefer to go before a tribunal of three, two of whom are doctors, than to go before any other tribunal, judicial or otherwise. In any case Section 19 of the Arbitration Act contemplates appeal only on questions of law, not on questions of fact, and it is

questions of fact which matter to the practitioner in an inquiry under Part VI. No doubt when the procedure of an inquiry under the National Health Insurance Acts was being assimilated to the procedure of arbitration under the 1887 Act, the object constantly before the minds of those who were devising procedure was that of getting decisions of fact without going to court. Neither Parliament nor the judicial bench are likely to encourage the re-trial of matters of fact already decided by some other tribunal. It is one thing to keep a lay tribunal straight on points of law, it is quite another thing to interfere with it on points of fact.

REWARD FOR MEDICAL DISCOVERY.

THE propriety of monetary recompense for scientific discoveries has been talked and written about for years without any clear outcome. The real issue is the difficulty of reconciling the two aspects, economical and ethical, of the problem. These two considerations are often in sharp and unexpected conflict, while both must be taken into account. Accepting the position outlined in a recent discussion on Prof. DREYER'S work, that even the most startling discovery in modern medicine can be no more than a link in a chain already forged, the element of chance in any individual piece of work proving to be that link is very large. When fame alone is to be the reward, merit is difficult enough to assess; if it be known that fortune also is at stake, heartburnings, struggles, and even those personal vituperations which have, to the honour of medicine, declined so greatly of recent years, may reappear. Even if the general principle is conceded that on ethical grounds that which proves of public service should be rewarded, the solution of the problem is not complete. Should the reward be a free gift, or should it be that form of gratitude which has an eye on favours still to come? We announced last week that the Canadian Parliament had unanimously voted an annuity of $7500 (£1500) to Dr. BANTING, the discoverer of insulin, to enable him to carry on his scientific work—or, as one lay paper phrased it, "to devote his life to medical research." It is the interpretation to be placed on this intriguing phrase, quite independent of its immediate context or of the personal problems of the present most worthy recipient, that we propose to investigate.

It is difficult to believe that this example of the Canadian Government will not be followed, and it therefore appears important to arrive at definite principles which govern such rewards, for they mark a distinct stage in the stimulation and encouragement of medical research. It should be settled first of all whether such grants are to be additional to any salary which the recipient would enjoy in the ordinary course of events. If not, they really represent institutional or university subsidies, and the way becomes open for intrigues among corporate bodies, with possible injustice to individuals; if, on the other hand, they are additional, then steps must be taken to ensure against the possible economic injustices inherent in subsidised labour. Again, are the grants to be given for actual or potential achievements? If for actual achievements, as already indicated great difficulties would seem to emerge. The placing of the coping-stone may be the least difficult part of the erection of a building, and how shall adjudication be made among the many labourers who have contributed to the whole? It must be remembered that the greatest discoveries may fail to receive contemporary recognition. Second-rate work is always more easily recognised by the majority, who themselves are and must be second-rate, and scarcely capable of recognising and immediately appreciating the enduring first-rate. Thus either injustice may be done or a reward may be delayed till it is no longer of use. If, on the other hand, grants are given for potential achievements, what provision will be made to ensure that the worker has facilities for carrying out his work? The ablest men are not always the most congenial colleagues, and we can conceive of a situation arising in which the recipient of such a reward may find it difficult to secure facilities. It must be remembered, also, that while few men achieve one great thing in life, far fewer achieve more than one. Is the recipient to have perfect freedom to elaborate for the rest of his life the details of his discovery—supposing that the same individual is temperamentally capable of such different forms of labour, or must he be for ever striving to produce a second discovery—a dangerous practice, for this way lie prematurity and disillusionment. May he forsake, for example, laboratory work and take up clinical practice, or is he to be tied to the one or the other? To the best type of man more than purely nominal control must be undignified and degrading, yet will nations or public bodies be prepared to support a worker indefinitely, without the periodical report or blue-book? Are they prepared to recognise that having chosen their man they must for ever after trust him and hold their peace, when the first flush of enthusiasm over his initial discovery has faded? The inevitable conclusion is that they must, if the tribute is not to be a yoke rather than a wreath.

To return to the particular instance which inspired this consideration of the broad issues involved, we may regard the rider appended by the Canadian Government to their gift as no more than a graceful recognition of the manner in which the man they have honoured will choose to live his life. This is in substantial accordance with the views of the joint committee representing the British Medical Association and the British Science Guild, whose report on the need for rewards for medical discovery was published in THE LANCET of Jan. 10th, 1920. Their proposals were: (1) That Parliament should resuscitate the precedent of JENNER by paying *compensation* when due for losses incurred in achieving medical discoveries; (2) that Parliament should provide an annual sum, say of not less than £20,000, for life pensions to be given as rewards to such of His Majesty's subjects as have made worthy medical discoveries, such pensions amounting to between £500 and £1000 a year. The Committee add that such pensions would be preferable to donations in capital, and the sums suggested would be sufficient, because men of science seek only such independence as will enable them to employ their talents in the manner they think best. The difficulties which we have set out above were appreciated by Earl BALFOUR, who as Lord President of the Council, received a deputation from the Medical Committee of the House of Commons in support of these recommendations. He received the proposals sympathetically, but held that a better plan would be to place investigators in a more comfortable position for carrying out their research work.[1] The two schemes are not incompatible, and indeed every important discovery made has a secondary value in enhancing the prestige and the claims for a living wage of those engaged in disentangling the intricate problems of medical science.

[1] THE LANCET, 1920, i., 570.

INDEX TO "THE LANCET," VOL. I., 1923.

THE Index and Title-page to Vol. I., 1923, which was completed with the issue of June 30th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

Annotations.

"Ne quid nimis."

THE CENTENARY OF THE LANCET.

THE dinner in celebration of the completion of the hundredth year of THE LANCET will be held in London on Wednesday, Nov. 28th, 1923. Sir Donald MacAlister, President of the General Medical Council, will take the chair, supported by the President of the Royal Society, the President of the Royal College of Physicians of London, the President of the Royal College of Surgeons of England, the Chief Medical Officer of the Ministry of Health, the President of the Royal Society of Medicine, and the President of the Medical Society of London. Dr. J. H. W. Laing and Mr. H. D. Gillies (7, Portland-place, London, W.) are acting as Honorary Secretaries to the Dinner Committee.

THE INFECTING AGENT OF EXANTHEMATIC TYPHUS.

Prof. W. Barykin and Dr. N. Kritsch, of Moscow, have announced[1] the discovery of what they claim to be "with very great probability" the cause of exanthematic typhus. Prof. Barykin has for four years been investigating typhus. He early found that the typhus process so altered the blood-vessels as to facilitate infection of the blood-stream with myriad micro-organisms, all of whom the blood of typhus cases agglutinated. It was in consequence of these very various infections that complications were so frequent, occurring as they do in 30 or even 60 per cent. of the cases. Secondary infections being so frequent, he concluded the true cause could only be discovered in the body in the early days of the disease, in the pre-eruptive stage, and that he could hope for no help from agglutination reactions. So he investigated 23 cases of pre-eruption typhus, finding nothing then in the blood but some small elements (0·4–1·5μ), closely resembling *Rickettsia provazeki* (0·64μ) or young forms of Plotz's bacillus (0·9–1·9μ); to these he gave the name *Microbion typhi exanthematici*. He and Afanassieff proceeded then to seek for it in 150 cases of human typhus, in 200 typhus-inoculated guinea-pigs, and in specimens from 11 early post-mortem examinations. They found that in the early days of the stage of invasion the bacterium (there seems no occasion for the term microbion) is so constantly present in the blood of the guinea-pig that, by its presence or absence, diagnosis can be definitely made even in the pre-eruptive stage, but the search may last for hours, and many films may have to be examined. It was in the blood that the bacterium was first found, but it occurs in far greater numbers in the cells of the brain, the spleen, and the suprarenals, growing within the cells into clusters, and in time killing the cells. The bacterium is not discoverable during the stage of incubation, and it could not be found in the organs of a hundred uninfected guinea-pigs and men. The investigation next concerned itself with lice; the bacterium was found in the intestinal epithelium and intestinal contents of 1050 of 1500 infected lice; it could not be found in lice from uninfected men. Further, in the intestinal contents of 280 infected lice, the bacterium was found in 192; it was found in the epithelium in 14 of the infected, in only one of the controls. It was difficult to make cultures of the bacterium until Kritsch hit upon the idea of making a medium out of the tissues in which the "microbion" is, customarily, most plentifully found. A pancreatised sterile broth being prepared, small portions of brain or spleen were rapidly removed under aseptic precautions, at early post-mortems of men or guinea-pigs dead in the first stage of the disease; these portions were minced very finely, mixed with the broth, and tubed. The tubes were over-layered with paraffin and incubated at 37° C. During the first ten days, the bacteria which had at first appeared, had gradually died out, and then the "microbion" might appear; it begins to grow in the tissue cells, only later spreading to the fluid. It begins as clusters of Gram-negative cocci, very small; later they increase in size and begin to stain with Gram. It is non-motile. At 37° C. they remain alive for 4–6 weeks, but die in an hour at 50° C.; once established it can be grown on pancreatised spleen- or brain-broth agar, on which it grows, aerobically, in round, glistening colonies. The growth is difficult to emulsify in normal saline; it will not grow in broth. Lastly, of 22 guinea-pigs inoculated with these cultures, 14 became infected; their disease, clinically, closely resembled typhus; few of them died, but in the ten that were killed at the close of the pyrexial stage there were found—hyperæmia of the spleen follicles with hyperplasia, hyperæmia of the suprarenals, hyperæmia and œdema of the brain; in other words, the histo-pathology of the infection produced by the bacterium in the guinea-pig is identical with that originated by typhus in man. On the strength of these observations Prof. Barykin and Dr. Kritsch make the claim that the bacterium is "very probably" the cause of typhus fever. We call attention to their interesting and suggestive observations. In spite of all the work which has been done upon it, the *Rickettsia* is not yet firmly habilitated as the cause of typhus. That the blood in typhus patients is invaded by other organisms needs confirmation. But the Russian authors have found a ready means of cultivating the infecting agent which will pave the way for further investigation.

[1] Archiv für Schiffs- und Tropen-Hygiene, 1923, Nr. 2.

ACID-FASTNESS.

ALTHOUGH acid-fastness has always been associated with the fatty constituents of the bacillus, this property cannot be removed from the organism by extraction with fat solvents alone. This fact may be considered well established, as Dr. J. A. Shaw-Mackenzie reminds us in his letter in another part of this issue. Aronson[1] it was who showed that if the organisms are treated with an acid in addition to fat solvents the acid-fastness can be completely removed by prolonged extraction. This important piece of work was confirmed by many workers, including Bulloch and Macleod,[2] Much and Deycke,[3] and others. The latter observers also showed that any organic acid such as lactic would answer the purpose. Prof. Dreyer finds that he can remove the acid-fastness by the action of formalin and fat solvent extraction. No explanation is advanced for the action of formalin in place of the usual acid treatment, but it seems probable that it may act by virtue of the appreciable amount of formic acid always present in 40 per cent. formalin. If this is the case the action would be analogous to the reaction of Much and Deycke with lactic acid. The bacilli obtained by this combined formalin and fat extraction treatment are made into an antigen apparently possessing valuable therapeutic properties. Since the discovery and preparation of tuberculin by Koch a large amount of literature has collected on the methods of preparation of tubercular antigens. By varying the technique each worker has hoped to produce an antigen more sensitive for both diagnostic and therapeutic purposes. Gabrilowitsch[4] was probably the first to work on fractional antigens. In 1891 he described a "tuberculum purum," obtained by extracting bacilli with xylol, ether, chloroform, and alcohol. This preparation was used for therapeutic purposes. Armand-Delille,[5] in 1902, worked with ether- and chloroform-extracted bacilli, whilst Leber and Steinharter,[6] in 1908, used an antigen prepared from chloroform-extracted bacilli on 350 patients.

[1] Aronson: Berlin. klin. Woch., 1898, xxxv., 484; also 1910, xlvii., 1617.
[2] Bulloch and Macleod: Jour. Hyg., 1904, iv., 1.
[3] Much: Beitr. klin. Tuberk., 1911, xx., 345; also 1911, xx., 353.
[4] Gabrilowitsch: Wien. med. Woch., 1891, No. 4.
[5] Armand-Delille: Arch. Exp. Path., 1902.
[6] Leber and Steinharter: Munch. med. Woch., 1908, No. 25.

A complete account of fractional antigens is given in a series of articles by Much and Leschke.[7] These workers divide their antigens into three groups. 1. Tuberkelbazilleneiweiss, named Tb. A. The bacilli were defatted by prolonged extraction with benzoyl chloride. There was no preliminary acid treatment, this being hardly necessary when it is remembered that a fair quantity of hydrochloric acid would be set free during the extraction process. 2. Fettsäuren und lipoide tuberkelbazillen, containing the lipoid and fat content. 3. Tuberculonastin, an alcohol and ether extract of the above. Tested as antigens by the complement-fixation test on various known sera, it was found that where Koch's B.E. gave positive results in 77·1 per cent. tuberculonastin gave only 56·2 per cent. of positives, the fatty-acid antigen 14·3 per cent., whilst the defatted antigen gave only 7·1 per cent. of positives. These three antigens were used by Much and Leschke for therapeutic purposes, although they refrain from stating how the results compare with Koch's antigens. In his book, "Die Immunitätswissenschaft," Much[8] quotes his work with Deycke on defatted and other antigens at great length. It is curious that here again no statement is made as to the relative values of these various antigens as compared with Koch's preparations. Judging from complement fixation, defatted antigen appears inferior to ordinary B.E. Prof. Dreyer is working with an antigen defatted in a very similar manner to the Tb. A. of Much and Deycke, and it is on the clinical and experimental results that interest will centre.

SUPERFICIAL SENSIBILITY.

IT is more than probable that the skin and touch have been associated in the mind of man from the time when he first analysed his feelings. The ancient philosophers dealt with the special senses according to their particular theories, and among these Democritus may be mentioned as upholding the opinion that all the senses were but modifications of that of touch. Aristotle held quite opposite views, and to him the skin was a necessary adjunct to the organ of touch, for certain philosophical reasons, but was not that organ itself, in the sense in which the eye and ear might be termed the special organs of sight and hearing. Galen subsequently made the distinction more definite, in that he seemed to lay more stress on the covering than on the tactile functions of the skin. It was, however, described later by Constantinus as the organ of touch, tactile sensibility varying in different places. After this we find Casserius, in the seventeenth century, going back to the opinion of Democritus concerning the essential unity of the senses, but he referred differentiation between them to the "sensitive faculty" in the brain: among the ancients this faculty lay in the proper organs of the senses, quite apart from the brain. Malpighi now described tactile papillæ in the skin, and referred tactile impressions to these, considering them to be formed by ends of nerves. Molinetti shared with Democritus and Casserius the view that all sensations are modifications of touch-sense, but with him the differentiation had to do with variation in number and arrangement of nerves, an opinion supported by Buffon in more recent times with much ingenuity. Thus there has been a slow progress in clarification of view about touch, a correction of opinion about functions of sense-organs, increasing appreciation of the rôle of the nervous system, search for anatomical bases for opinions, and analysis of the senses themselves. To-day we find the progress still going on, and the analysis becoming more critical. Head, by his researches and by the classical experiment on his own arm, led us some years ago to distinguish between deep and superficial sensibility, and gave reasons for subdividing this last into two classes. Prof. J. S. B. Stopford, who has done much sound and philosophical work in the last few years on wounded nerves, has proposed recently that deep sensibility should also be divided into classes corresponding with those of cutaneous sense. Prof. Stopford has added much to our knowledge of nerve distribution in the upper limb, and has described fibres to the deeper layers from nerves usually considered purely sensory, thus giving a structural basis for certain of his conclusions. He suggests[1] thalamic and cortical terminations for tracts subserving protopathic and epicritic sensation respectively. Evidently anatomico-physiological analysis of touch-sense is progressing satisfactorily, but the end of it is not yet.

[7] Much and Leschke: Beitr. klin. Tuberk., 1911, xx., 341, 351, 405.

[8] Much: Die Immunitätswissenschaft, 1911, pp. 230–261.

THE NEW B.P. CODEX.

A NEW and revised edition of the British Pharmaceutical Codex has just been issued by the Pharmaceutical Press (72, Great Russell-street, London, W.C.), by direction of the Council of the Pharmaceutical Society of Great Britain. This is the third edition since 1907 when the Codex first appeared. The scope of it was then defined as an imperial dispensatory for the use of medical practitioners and pharmacists, containing information respecting all drugs and medicines in common use throughout the British Empire, including the principal substances and preparations which are official in the pharmacopœias of France, Germany, and the United States, as well as those described in the British Pharmacopœia. The original work contained in the volume represents the fruits of arduous labour and extensive investigations, partly performed in the research laboratory of the Pharmaceutical Society, but a large proportion privately undertaken by individual members of that Society. The present edition contains much new matter and has been brought into line with the British Pharmacopœia of 1914 and the ninth revision of the U.S. Pharmacopœia. While the genera plan of the work has been left unaltered, the chemical nomenclature has been brought into line with modern views and the physiological action of important substances has been extended in accordance with the latest development of medical research. Doses are now set out in metric units with a parenthetic alternative in grains and minims. The extent of time-saving to which a general adoption of the metric system would give rise is apparent in a table giving the percentage equivalents of grains (minims) in pint, pound, and ounce. The index is a marvel of completeness and the Codex, 1923, forms a work of reference of great value and accuracy.

FURTHER DISCUSSIONS ON THE DIET OF THE WEANLING.

NOT much more than two years ago the Society of Medical Officers of Welfare Centres, now incorporated as a group of the Society of Medical Officers of Health, discussed at some length the choice of a diet for a child from weaning to the age of 5 years. The meeting was fully reported in our columns and our comments thereon led to some lively correspondence. It appeared that the subject was to be further developed, for among the items in the programme issued of the proposed activities of the Conference on Infant Welfare held during Baby Week at 117, Piccadilly, London, W. 1, was a discussion by this group on the Feeding of Children from 5 Years of Age, to be opened by Prof. E. Mellanby. This would appear to us a subject of interest to practitioners as well as to parents and to the elementary schools providing dinners to infant classes, though presumably designed for the information of medical officers of infant welfare centres, giving parting instructions on dismissing the child to parental care. Owing partly to an apparent misprint in the programme and to some extent to the absence of Prof. Mellanby, the debate was less illuminating than might have been expected. It dealt with the feeding of children, not after 5 years old, but from 1 to 5, and it will be seen by our report

[1] Brain, iii. and iv., 1922. Also Jour. Anat., 1918, 1921, 1923.

(see p. 69) that the principal speakers and the points raised did not greatly differ from those at the 1921 discussion. Dr. Eric Pritchard opened with an exposition of his well-known views, which are too sane and broad to stimulate active opposition. Dr. Harold Waller has not found reason to modify his attitude of scepticism on milk as the ideal diet for the healthy weanling. The discussion yielded questions rather than information; Dr. Pritchard resisted firmly attempts made to force him to make oracular pronouncements, intimating that neither he nor anyone else is yet in a position to dogmatise on the ideal diet for children—or indeed for adults. The difficulty is not one of simple progression towards a known goal, but concerns rather the solution of the problem of finding without mathematical instruments the centre of a scalene triangle whose dreaded angles are malnutrition, constipation, and dental caries. It may be easy to find a point equidistant from any two of these acknowledged evils, only to find ourselves perilously near the third. Diets with little indigestible matter are not likely to give stimulation to the bowels of children of costive habit, and bulky carbohydrate foods, though condemned by the dentist and by the dietician, are often prescribed by the physician. Again, the hard food requiring mastication which is desirable to keep even milk teeth in good condition and promote the cleansing flow of saliva may well be beyond the digestive powers of the gastric juice of a very young child, whereas lump or barley sugar, cheap, digestible, of excellent energy value, soluble, and consumed with avidity by children, is hardly ever prescribed even for the marasmic child, possibly out of undue consideration for the teeth. A compromise must be arrived at, and no progress will be made until it is recognised that the contradictory advice so bewildering to mothers is the result of a real conflict between the aims of individual specialists who consider as of primary importance the general nutrition, the conservation of the teeth, or the maintenance of regular defæcation without aperients.

AN INDICTMENT OF PROTEIN TREATMENT.

THE idea that stimulation and irritation of the tissues can be exploited for the benefit of the patient is far from new, and Virchow's teachings in this connexion date many decades back. But it is only of late that protein activation in one or other of its aliases has become a popular vogue, and in Germany, at any rate, the practice of giving remedies by parenteral injection for almost every complaint has become very common. If this treatment is as effective as the list of substances for parenteral injection is long, there would surely be no scope for any other form of treatment. The favourites in this list would seem to be sterilised milk or a 5 per cent. solution of casein, a suspension of sulphur in olive oil, collargol, phylacogen, jodormone (a compound of iodine with horse serum), sanarthrit (a cartilaginous extract), yatren-casein, vaccineurin, ophthalmosan, and other milk products. There are many other proprietary remedies in the same class, and most, or all of them, are supposed to be beneficial on account of focal and general reactions. A feature of this form of medication, which is very impressive from the patient's point of view, is the fact that the physician's prophecy that a febrile reaction will occur in so many hours actually comes true. There is nothing which impresses the patient and gives him faith in both physician and remedy so much as a prognosis which comes true not merely to the day, but to the hour; to have a reputation for omniscience is helpful in practice, but to be blest with a reputation for prescience may be even better. During the last year or two doubts have been expressed in more than one quarter as to the permanency of the effects of "Reizterapi" (as it is known in the Scandinavian countries), and at the Bispebjaerg Hospital in Copenhagen a systematic attempt has been made by Dr. H. Jansen and Dr. E. Begtrup[1] to study the effects of this treatment on chronic disease of the joints. To make the trial as fair as possible, they dispensed with other remedies in as many cases as possible, and selected comparatively early cases of joint disease for their tests. These were made with subcutaneous, intramuscular, or intravenous injections of caseosan, intragluteal injections of a suspension of sulphur in olive oil or of plain, sterilised cow's milk. Intravenous injections of collargol and subcutaneous injections of phylacogen were also given, and two new preparations not yet put on the market by their German inventors, were also tested. The records of many of the cases are published in detail, and common to practically every case was the observation that whether the immediate results were good, bad, or indifferent the patients were ultimately little or no better off than before. Sooner or later practically all these patients had to fall back on hydropathic and other physical remedies, the effects of which were on the whole very much better than those of "Reizterapi." The authors' fair tests and critical analysis of this treatment may chill the ardour of some of its supporters.

[1] Ugeskrift for Laeger, June 14th, 1923.

THE CHILDREN'S SANATORIUM AT HOLT.

THE Children's Sanatorium at Holt, Norfolk, was originally intended only for early cases of pulmonary tuberculosis in the poor. Poverty, however, is a relative matter, and the governing body has recently decided to set aside a ward for children of middle-class parents who are not in a position to afford the necessarily high fees of private sanatoriums. The weekly charge for these patients will be £2 2*s*., and they will have the same treatment as the other children except for the sleeping arrangements. It is satisfactory to learn from the last annual report of the sanatorium that the average duration of treatment is as long as 41 weeks, and that it makes no "cure-you-while-you-wait" claims. During 1922 all the available 48 beds were occupied, and the number of in-patients was 56. We are sure that the new arrangement will materially increase the usefulness of this institution.

SULPHUR IN THE TREATMENT OF ARTHRITIS.

SULPHUR has long been used in the treatment of skin affections and as an adjunct in the treatment of syphilis, but only recently has it been used at all extensively for the relief of joint affections. The chronic rheumatoid and osteo-arthritic conditions might well be placed foremost among the diseases which cause the greatest and most prolonged suffering and disability to the patient and the greatest perplexity to the practitioner, the very hopelessness of all known methods of treatment driving him to despair and leading him to expend his energy and thought on other more profitable fields of research. From the reports received it appears that sulphur given intramuscularly in the form of an oily emulsion has a specific effect on chronic arthritic conditions, and while not in every case producing complete restoration of function, affords a very great measure of relief from pain and increase in mobility, thus enabling the patient to return to a useful and comfortable existence. Dr. Herbert Hayn,[1] of Breslau, reports 11 cases of different forms of arthritis, including acute and chronic rheumatoid and osteo-arthritis, gonococcal arthritis, and gout, some of many years' duration and completely bedridden. In all an undoubted improvement was seen, most noticeable in those cases which had resisted the orthodox methods of treatment, and bedridden patients left the hospital walking. The sulphur therapy consists of intramuscular injections of a 1–8 per cent. emulsion of sulphur in oil, repeated at intervals of 5–6 days. The number of injections required varies, in the cases reported from 5–13. The immediate reaction to the injection, which is independent of the quantity given, is severe. The temperature rises within 12 hours to 40° C. and a rigor occurs, the patient complains of intense headache,

[1] Deutsche medizinische Wochenschrift, May 25th, 1923.

general malaise, and great pain, most marked in the affected joints. Locally there is a small circumscribed swelling and slight tenderness, but no cases of abscess formation or of necrosis have been observed, nor has there been any disturbance of the function of the renal, vascular, or hæmopoietic systems. The reaction subsides completely in 24 or at most 48 hours and the patient feels perfectly well. Combined with the sulphur therapy, such external applications as hot air, baths, massage, and passive movements should be persisted in, and it is important that these should not be omitted, for it is only during the sulphur treatment that their maximum benefit can be obtained. The result of the treatment on the joints is that there is rapid diminution of pain, the swelling decreases, and the range of movement is markedly increased, while the general condition of the patient correspondingly improves. Acute affections which respond to salicylates were not treated by this method.

COMMITTEE ON THE USE OF PRESERVATIVES IN FOOD.

As we recently announced, a deputation of medical officers of health and others to the Ministry of Health, urging the need for further control in the use of food preservatives, received the gratifying assurance that a committee was being appointed to consider the whole question. The personnel of this Committee is as follows: Sir H. C. Monro, K.C.B. (chairman); Prof. W. E. Dixon, M.D., F.R.S.; Sir A. D. Hall, K.C.B., F.R.S.; Dr. J. M. Hamill; Mr. O. Hehner, F.I.C.; Prof. F. G. Hopkins, F.R.S.; Dr. G. R. Leighton; Dr. A. P. Luff; Dr. C. Porter; Mr. G. Stubbs, F.I.C. They are asked to inquire into the use of preservatives and colouring matters in food and to report:—

1. Whether the use of such materials or any of them for the preservation and colouring of food is injurious to health, and, if so, in what quantities does their use become injurious.

2. Whether it should be required that the presence of such materials and the quantities present in food offered or exposed for sale should be declared.

The secretary of the Committee is Mr. A. M. Legge, of the Ministry of Health, Whitehall, S.W., to whom all communications should be addressed.

LEGITIMATE REQUIREMENT OF OPIUM.

IN the July number of the *Contemporary Review* appears an article by Sir William Collins dealing with the present position of the opium traffic. It will be remembered that Sir William Collins, together with Mr. (now Sir) William Max-Muller, signed, on behalf of the British Government, the Convention drafted at the First International Opium Conference held at The Hague in 1912. Since 1919 the League of Nations has been entrusted with the carrying into effect of the Convention, in so far as the States which are members of the League are concerned. We have repeatedly referred to the work of the Advisory Committee on Opium, appointed by the Council of the League to supervise the execution of the Convention.[1] The Committee has continued the work formerly carried out by the Netherlands Government in endeavouring to secure ratification of the Convention by all the Powers, and has made an attempt, in coöperation with the Health Committee of the League, to ascertain the amount of opium, morphia, cocaine, and heroin required for legitimate consumption, but so far with inconclusive results. The problem of the "legitimate" needs of one country and another has given rise to much discussion, particularly with regard to India. The Indian Government takes its stand on the findings of the Royal Commission of 1895, to the effect that prohibition of poppy cultivation and the manufacture and sale of opium in British India would involve the destruction of the heavy export trade in Bengal opium to China and elsewhere, and would inflict a heavy loss of public revenue on the Government and people of India. The Commission also found that opium was a "universal household remedy," that it was "extensively administered to infants," and that it was used as a stimulant and prophylactic against malaria and fever. The Indo-Chinese trade, however, was terminated in 1917; some 14,000 chests of Indian Government opium are annually exported to meet the "legitimate requirements of the non-China markets"—the latter including the Straits Settlements and North Borneo. The Indian Government condemns opium-smoking as "essentially a social vice," and, speaking generally, it is their policy to "confine the use of the drug within the narrowest possible limits." The manufacture of opium for smoking in India is said to be prohibited except by the individual for his own use. With regard to China, it is to be regretted that this country, which was reported to be free from poppy cultivation in 1917, has since resumed a large production of opium, by the action of provincial governors in defiance of commands from Peking. In a recent issue we dealt with the estimated legitimate needs of China—2000 oz. for a population of 400 millions with a yearly sickness incidence set at 20 millions.[2] At the session of the Advisory Committee held at Geneva in June, the United States representatives pressed for limitation of production of the drugs dealt with in the Convention to the amounts required for strictly medicinal and scientific purposes. This proposition was apparently approved subject to a reservation on behalf of the Government of India, and to a declaration that so long as opium-smoking is not, as the Convention of 1912 contemplated it should be, suppressed, opium raised for that purpose is to be deemed legitimate. Sir William Collins in his article described a personal inquiry into the legitimate use of the drugs in question, as follows:—

> "With the assistance of Mr. Langford Moore, pharmacist to St. Bartholomew's Hospital, I have recently ascertained that at ten of the larger London hospitals, treating 70,000 in-patients and 550,000 out-patients a year, the amount of opium used is about 40 lb. per annum, of morphia 5½ lb., and of cocaine just over 9 lb. These relatively modest amounts, which suffice for the legitimate medical treatment of 620,000 sick and injured persons in a year, contrast strikingly with the hundreds of thousands of kilograms of opium annually raised, and the tons of morphia and cocaine annually manufactured and exported."

These findings form another useful indication of the actual quantity of drugs of addiction which is necessary for the use of the world; it is for the League of Nations, with the aid of the United States, to strive for prevention of any output in excess of that quantity.

SIMULTANEOUS OBSERVATIONS ON GASTRIC AND DUODENAL SECRETIONS.

THE interesting studies on human digestive secretions which have emanated from the Department of Physiology of the University of Edinburgh have been extended by the introduction of a new technique. We recently published[3] an article by Dr. A. R. Matheson and Dr. S. E. Ammon describing the vigorous secretion of gastric juice which appears in the fasting human stomach in response to a hypodermic injection of histamine. In the current number of the *Edinburgh Medical Journal* Drs. R. K. S. Lim, A. R. Matheson, and W. Schlapp give a preliminary account[4] of their latest work. They introduce two tubes, the first into the duodenum, the second into the stomach, and by applying continuous aspiration to both of these they are able to recover the main bulk of the secretions both of the stomach and the duodenum; the method has the great additional advantage that the duodenal secretion is unadulterated with gastric contents, these being removed separately. Three experiments on normal subjects are described; in all of these a marked increase in gastric secretion was

[1] THE LANCET, 1921, ii., 518, 1230; 1922, i., 1004.

[2] THE LANCET, June 23rd, p. 1274.

[3] THE LANCET, 1923, i., 482.

[4] Edin. Med. Jour., July, 1923.

obtained after administration of histamine, the increase being both in volume and in concentration of acid with a resultant great augmentation in total acid secretion. In two of the subjects there was no increase in duodenal secretion, and the slight increase in the third is believed to have been due to some escape of gastric contents into the duodenum. One of the most important lessons of this work would seem to be its reiteration of the fact that patience and care on the part of the observer are the only requisites for performing extensive experiments on the alimentary canal in the human subject. Duodenal tubage for diagnostic and therapeutic purposes is an everyday procedure in several clinics both in the United States and in Austria; our Edinburgh colleagues have again demonstrated that simultaneous passage of two tubes is a relatively easy matter and that useful observations can thus be obtained.

CEREBRAL CYSTS.

ACCORDING to Dr. H. G. Jacobi,[1] of the Lenox Hill Hospital, New York, who records a case of his own, cerebral cysts are of infrequent occurrence and their detection by clinical means is extremely difficult. In most cases the diagnosis is not established until the autopsy. Of 299 cases of brain tumour in children collected by Starr, 30, or nearly 10 per cent., were cysts, which occupied the following situations: basal ganglia and lateral ventricle, 1; pons, 1; medulla, 1; base, 1; cerebellum, 9; and centrum ovale, 15; 2 of the tumours were multiple. The formation of cysts has been attributed to a variety of causes, perhaps the best classification being that of Bruns, who divided cysts into five groups according as they were: (1) of congenital origin; (2) parasitic, due to the cysticercus or more rarely the echinococcus; (3) traumatic, developing around spicules of bone; (4) the result of brain softening; (5) without any accountable ætiology. Dr. Jacobi's case, which was in an infant, aged 1 year, presented the following features of interest: (1) A sudden onset, simulating an acute infectious process; (2) indefinite signs and symptoms, making an ante-mortem diagnosis impossible; and (3) the presence of hyperglycæmia and glycosuria possibly due to pressure of the cyst on the fourth ventricle, as in the well-known experiment of Claude Bernard. Death took place in coma after three weeks' illness, and the autopsy showed a cyst containing creamy yellowish fluid situated beneath the posterior horn of the right lateral ventricle. From the chemical analysis of its contents, which showed that the principal constituent was pseudomucin, Dr. Jacobi is inclined to regard the cyst in his case as being of the proliferative type and of congenital origin.

THE INTERNATIONAL CONGRESS OF SURGEONS IN LONDON.

ON Tuesday next the Sixth Congress of the International Society of Surgery opens at the House of the Royal Society of Medicine in London. The programme, which is an attractive one, is set out on p. 99. The Congress brings to this country a number of surgeons of world-wide distinction. The veteran Dr. W. W. Keen, of Philadelphia, now in his eighty-seventh year, expects to be present. Among the members of the committee who will take part are Prof. F. de Quervain, of Berne; Prof. Henri Hartmann, of Paris; Prof. Johan Nicolaysen, of Christiania; Dr. Th. Jonnesco, of Bucharest; Prof. C. F. A. Koch, of Groningen, and Prof. C. Willems, of Liége, the President of the Committee. Dr. William Mayo, of Rochester (Minn.), and Dr. Banting, of Toronto, will take part in the discussion on endocrine surgery; Dr. Crile, of Cleveland, in that on operative shock. The foreign guests will receive a warm welcome, not only officially from the Foreign Minister and the Minister of Health, but also from their surgical friends and colleagues in this country.

[1] American Journal of Diseases of Children, June, 1923.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XXVIII.—THE TREATMENT OF TRAUMATIC RUPTURE OF THE URETHRA.

TRAUMATIC rupture of the urethra is a comparatively rare accident not in itself especially dangerous; but if mismanaged serious complications may ensue and the troublesome stricture which commonly follows has given it an unenviable notoriety.

Pathology.—The accident occurs (*a*) without injury to the bony pelvis; (*b*) as a complication of injury to the latter. In the former case the injury involves the urethra just in front of the triangular ligament in the region of the bulb, while in the latter it is above the ligament and therefore intrapelvic. In either case the urethra may be contused without laceration, or its mucous membrane may be partially torn or completely severed. In contusion there may be some submucous tearing of the urethral wall—interstitial rupture—but the mucous membrane is intact. In partial rupture a gaping wound involves the whole thickness of some part of the wall. In complete rupture there is usually a complete transverse tear, when the ends retract to the extent of an inch or more and they also contract; the tendency to occlusion is further aided by the pursing up of the torn mucous membrane and the accumulation of blood clot between the ends. The laceration may, however, be oblique or irregular, or a section of the whole urethra may be pulped, so that it subsequently necroses or is converted into a mass of scar-tissue. The extent of the injury disclosed when the parts are exposed is generally much greater than would be anticipated from the symptoms and physical signs. The outstanding features of urethral injuries are: (1) effusion of blood; (2) extravasation of urine, local or widespread; (3) infection. Some of the bleeding occurs into the lumen of the canal, escaping through the meatus, but a considerable amount infiltrates the tissues outside the urethra and between the margins of the wound in its walls. The extravasation of urine may be localised to the immediate vicinity of the injury, or may be more widely diffused into the cellular tissue of the perineum delimited by the fascia of Colles, or into the corresponding tissue outside the peritoneum where the injury is above the triangular ligament. Infection may be limited to the parts surrounding the urethra, with or without a localised abscess, or may follow the extravasation.

How Healing is Brought About.—When the urethral wound is kept in apposition, and there is no infection, healing readily takes place with a minimum of scar-tissue; otherwise, healing can only occur slowly by granulation with the maximum of scar-tissue. In complete rupture the channel may be fortuitously restored though seriously narrowed, but more commonly complete obliteration of a section of the urethra occurs, the urine escaping through sinuses.

Faults in Current Teaching.—Many text-books teach that an attempt should be made to pass a catheter into the bladder, the instrument being tied in and left for eight to ten days. Should catheterisation be impossible, perineal section is advocated, the urethra to be carefully and completely sutured around an instrument. In either case large bougies are to be frequently passed for a few weeks.

Now even if a catheter can be passed, the conditions are not ideal for healing. When a catheter rests in the sphincter, the latter relaxes, allowing urine to trickle by its side into the urethra towards the wound, and this invariably leads to infection. Apart from this leakage, the constant presence of the catheter itself acts as an irritant and is almost always associated with some slight infection—harmless in the normal urethra, but a forerunner of scar-tissue in a urethral wound. Again, it must be recognised that complete

circular suture of any tube tends to narrow its lumen, and the urethra is neither so large nor so distensible that this narrowing can be permitted with impunity. The passage of large bougies frequently tears the freshly united tissues, inflicting further injury which can only repair by the formation of more scar-tissue; there results a vicious circle.

The Principles of Treatment and Their Application.

Certain principles may be outlined: (1) Urine must not be allowed in contact with the damaged area until healing is complete. (2) The torn ends of the urethra must be brought into apposition. (3) No foreign body, such as a catheter, must be allowed in contact with the urethral wound during the process of healing. (4) After union, the urethral channel at the site of the injury must not be re-injured by the frequent passage of unnecessarily large bougies. On these principles all cases of rupture of the urethra in which blood escapes from the meatus require operation. In contusions without bleeding from the urethra the use of the catheter is permissible and may suffice, but if there is increasing difficulty or a swelling develops in the perineum, operation is indicated. There is a type of case in which the symptoms, after an injury to the perineum, are often accounted too slight to need treatment; there are pain and passage of a little blood, but there is little or no difficulty in micturition. In these very slight cases operation, even if limited to perineal drainage behind the site of the injury, will have happier results than expectant treatment.

Treatment must be carried out before attempts to micturate have driven urine into the tissues around the canal or involuntary escape from an over-distended bladder has led to the same result. A delay of several hours may be unavoidable before the patient can be removed to a properly equipped hospital or the services of an operating surgeon secured, and certain temporising measures may have to be employed. The patient must be instructed not to attempt to micturate; a sedative may be administered to help him to desist. If operation cannot be undertaken within two or three hours of the accident, the bladder is distended and desire to micturate insistent, the bladder should be punctured suprapubically, using local anæsthesia, or without if a fine trocar and cannula, with aspiration apparatus, be used. The trocar is removed lest a fistula should develop, and the puncture repeated if necessary.

Operative treatment involves perineal section, exposure and repair of the injury, and temporary perineal drainage of the bladder. The patient is in the lithotomy posture in a good light and a catheter or a rigid staff is passed to the site of the injury. An incision of ample length is then made, from the base of the scrotum to near the anus, and is deepened until the urethra is reached. The site of the tear, indicated by blood-clots, should be fully exposed and all clots wiped away or removed gently with a spoon until the exact amount of damage is ascertained. When the urethra is completely divided it may be a little troublesome to find the retracted proximal end; urine escaping or expelled by suprapubic pressure may furnish a useful guide. I have never met a case in which it was necessary to open the bladder for retrograde catheterisation. The distal end, if not at once found, can be identified by passing a rubber catheter from the meatus. The ends once found, can nearly always be approximated and should be fixed together by sutures joining only the roof and the sides of the canal. The floor is then represented by a diamond-shaped space which, when it heals by the approximation of the surrounding tissues, leaves the urethral channel larger at the site of the injury than elsewhere, thus allowing for some contraction which will inevitably occur. A rubber catheter may, if desired, be passed from the distal to the proximal urethra during the process of suturing, but in any event must be removed when the latter is completed. When the tear is limited to part of the circumference it is diminished by sutures but the floor is always left open. The approximation of the urethra being complete, the floor of the proximal end is incised in its long axis for half an inch backwards from the site of the tear. A rubber catheter, size 12 or larger, is then passed from the perineal wound through the incision in the floor of the posterior urethra into the bladder, and is fixed to the skin margin with a silk-worm suture. The catheter now lies in the posterior part of the perineal wound, while the sides and edges of the anterior part are drawn together over the sutured urethra. Only one or two stitches are necessary as the parts lie naturally in contact when the legs are extended side by side. If the urethra is pulped so that the gap cannot be bridged a catheter may be passed from the distal into the proximal segment; the segments are then drawn together as nearly as possible, the deficiency being made good by the surrounding tissues aided by any shreds of urethral mucous membrane, which are carefully cherished and laid along the catheter. It may be necessary to reconstruct the urethra with flaps of fascia lata or by some other device, but it is wonderful how often the channel is usefully restored without these aids when the urine is conducted away from the area during the process of healing. Some surgeons prefer to perform suprapubic cystotomy, but this is no more efficient than the perineal drain. While the catheter remains in the bladder it must be washed out twice daily to ensure that its lumen is kept free. As phosphates are liable to form around its end the patient must take 1 drachm of acid phosphate of soda and 15 gr. of urotropin in a glass of barley-water each day. The drainage catheter is removed in ten days, after which urine will escape from the perineum for a week or so and later will find its way through the normal channel. Three weeks after the operation, a Lister bougie 9/12 or a silver catheter No. 10 is very gently passed into the bladder; this will present no difficulty if the roof of the urethra is carefully followed. No force is permissible and no larger instrument is necessary. Three weeks later the same instrument is again used and if it passes easily need not be tried again for two months. If narrowed the passage should be dilated until it admits the 9/12 Lister, but no further. A similar instrument should be passed quarterly for a year, afterwards at increasing intervals.

Complications.—Old and Neglected Cases.

Secondary hæmorrhage on removal of the catheter from the perineum is treated by its reintroduction for 24 hours or by packing with iodoform gauze soaked in 1 in 1000 adrenalin solution. A tiny fistula persisting in the middle of the perineal wound may be cured by applications of pure carbolic or nitrate of silver fused on a straightened hairpin or a touch with a fine cautery point. In those cases in which extravasation has already occurred, the perineal swelling must be freely incised down to the site of injury and further incisions made wherever necessary. When possible the proximal urethra must be found and a catheter passed along it into the bladder as already directed, but no prolonged attempt should be made to expose the ends by dissection amidst tissues already infiltrated with sepsis. The main indication is to provide a ready escape for urine and products of infection. If this is successful the urethra may heal or a secondary operation may be carried out when the swelling has subsided.

Rupture of the Urethra Complicating Pelvic Injury.—In this condition the urethra is nearly always torn just at the apex of the prostate and extravasation occurs into the pelvic cellular tissue. The accident is an absolute indication for surgical interference and it is extremely important that it should be carried out before extravasation has occurred. Procedures already detailed may have to be supplemented by suprapubic drainage of the bladder as well as by incisions above the iliac crests for the relief of extravasation. Healing may occur with some deviation of the channel which may render it difficult to pass solid instruments into the bladder, though there may be no stricture or interference with micturition.

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Special Articles.

PROBLEMS OF ACCLIMATISATION.*

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THE preceding lecture was devoted to a somewhat comprehensive though by no means exhaustive account of intentional or unintentional white settlements in the tropics, and to a consideration of the various and varying views which have been advanced regarding such efforts at colonisation. There still remains, however, one important point which must not be forgotten, and that is the influence of altitude in modifying the climatic effects of a country in the tropic zone.

TROPICAL HIGHLANDS.

Kenya is much in the public eye at present and, so far as the British Empire is concerned, Kenya is the colony specially interested in this question. Unfortunately it is not one which can readily be answered. We know, of course, that in a climate like that of the East African highlands many Europeans can and do lead active and energetic outdoor lives. It is possible that, if native labour was not forthcoming, they could with impunity, so far as health is concerned, undertake the work which now falls to the lot of the Kikuyu and other sons of Ham. It has, indeed, been suggested that the European might labour like the native provided he knocked off work during the hot hours—i.e., from 10 A.M. to 3 P.M. This, however, would make a very short working day, which, I understand, would not satisfy the needs of the agriculturist.

The children, despite statements to the contrary, do well. I remember during the war attending a children's party at Government House, Nairobi, and being struck by the fitness and high spirits of the youthful guests. Save for the fact that they were somewhat pale, they would have compared favourably with a similar gathering of youngsters in this country. Moreover, a few children born in the colony have attained adult life and appear to be healthy and vigorous men and women. It must, however, be remembered that it is not merely a question of bodily health and energy. A weakening of will power is one of the first tokens that a hot climate is beginning to tell upon an individual and it manifests itself, as Huntington points out, in many ways, but chiefly along four lines—namely, lack of industry, irascibility of temper, drunkenness, and excess in venery. As we view the past and as the future unrolls, it will be interesting to see if some or any of these failings are in evidence, not only in the Kenya highlands, but elsewhere amongst European communities who have settled in tropical uplands. If such traits do make their appearances it will be well to recall the fact that while, as ever, several factors are concerned, climate may be playing an insidious but none the less definite part in lessening restraint. Speaking generally, the white population of Kenya is industrious and has faced manifold difficulties in a gallant manner, but it is a question if, as the long years pass, there will not be seen a tendency towards slackness, especially perhaps when the stimulus of rapid development has somewhat abated. Still, these are early days and there are scarcely any scientific data on which to base an opinion.

Steudel,[1] it is true, states that in the case of Europeans living in tropical highlands changes occur in the nervous system, if not in the first certainly in the second and subsequent generations. Indeed, he records the presence of neurasthenia amongst Germans who had been living at high altitudes in what is now known as Tanganyika territory. Naturally the altitude itself, provided it be considerable, complicates the question. The matter lies outside the scope of this lecture, but those interested may with advantage consult Hingston's[2] paper as regards India, and that of Ocaranza[3] who deals with Mexico. Meyer[4] has also considered the subject, so far as the blood picture is concerned, while Mackinnon[5] commenced a research at Nairobi on the cardiac condition in children. It is unfortunate that he was unable to continue his inquiries, but he has recently published an interesting paper[6] on education in its relation to the physical and mental development of European children of school age in Kenya. He finds that the warmth and light exercise a stimulating and salutary effect on growth, at least when the food conditions are satisfactory. Both as regards height and weight the Kenya children compare favourably with English children of the same age and presumably, though he does not say so, of the same social class. At first, also, there is a quickening of mentality. In fact, all goes well until the age of 10 years is reached, but thereafter a gradual process of mental exhaustion and deterioration supervenes, which appears especially to affect the memory and the power of application. So much is this the case that he considers that the Government would be well advised to limit any scheme for secondary education to such children as cannot be sent out of the country, and should, by establishing scholarships and providing monetary grants, enable children after the age of 10 to be despatched to the home country for the completion of their education. Here, then, there would appear to be definite evidence of the deleterious effect of climate upon the developing nervous system. Kohlbrugge,[7] also, with a long experience of Java, considers that a tropical mountain climate is very deleterious to the nervous system of Europeans. Altitude is said to be beneficial rather than harmful, as it favours lung expansion and increases the number of the red blood cells.

STIMULATING POWER OF CHANGEABLE CLIMATE.

So far as Kenya is concerned, if we put aside any possible influence which may be exerted by the native races or the immigrant East Indians, the future of the white race inhabiting its high plateaus would appear to depend on whether or not its climate has sufficient stimulating power. Now what are the attributes which confer upon a climate powers of stimulation? Moderate changes of temperature from one day to the next play a great part—indeed, it would seem a greater part than relative humidity, though the degree of humidity is important. It should, however, be noted that Schilling,[8] a German authority on the subject, is of opinion that an equable temperature is only deleterious because it is almost always associated with a high degree of atmospheric humidity. Be that as it may, there is no doubt that the ideal climate is characterised by moderate changes with air cooling at frequent intervals. According to Huntington,[9] mental activity reaches a maximum when the outside temperature averages about 38°, that is when there are mild frosts at night. Huntington also lays great stress on the influence of storms and, from a study of history, shows how climatic changes occurred in certain regions of the world, how such changes consisted primarily of a shifting of the belt of storms, how countries like China, Mesopotamia, Palestine, and Egypt, which in the olden days lay within the storm belt, possessed great civilisations and intelligent and vigorous people, and how, with a change of climate, there was retrogression. His "pulsatory hypothesis" of climate, as he terms it, signifying that changes have taken place irregularly in great waves, is certainly well worthy of consideration, as is the theory he has evolved from it, even if he finds it difficult to explain on his hypothesis the ancient culture of Indo-China and Ceylon. We cannot, however, follow him further in his argument; revert-

* The second of a series of lectures, delivered at St. Bartholomew's Hospital on June 14th under the auspices of the Academic Council of the University of London. The first lecture appeared in THE LANCET of June 30th.

ing to Kenya, it may be said that while limited portions of the high tablelands would appear to be blessed with climatic conditions which should suffice for purposes of stimulation, it is, to say the least, doubtful if this can be predicated of the whole elevated area over which white settlers are scattered, and more especially of Nairobi and its immediate neighbourhood. Still, only time can show, and it should be remembered that we do not yet know if marked changes in the 24 hours as, say, between the day and night temperature or even considerable diurnal variations, can make up for the differences of season as experienced in temperate lands. The future is, as it were, upon the knees of the gods and, as we shall see, there may yet be developments which will modify the climate or enable men to defy it.

CLIMATE AND HUMAN METABOLISM.

Having considered the broader aspects of this question of the influence of tropical climate upon the white races of mankind it is time to discuss its effect on human metabolism in more detail. Huntington likens the influence of climate upon men to that of a driver upon his horse, and the simile is both homely and apt. He says:—

"Some drivers let their horses go as they please. Now and then a horse may run away, but the average pace is slow. Such drivers are like an unstimulating climate. Others whip their horses and urge them to the limit all the time. They make rapid progress for a while, but in the end they exhaust their animals. They resemble climates which are always stimulating. In such climates nervous exhaustion is likely to prevail and insanity becomes common. A third type of drivers first whip their horses to a great speed for a mile or two, and then let them walk slowly for another mile or two. They often think that they are accomplishing great things, and they are better off than the two types already mentioned, but they still have much to learn. They are like a climate which has a strong contrast of seasons, one being favourable and the other unfavourable. Still a fourth kind of driver may whip his horse sometimes and sometimes let him walk, but what he does chiefly is to urge the animal gently with his voice, then check him a little with the rein. By alternate urging and checking he conserves the animal's strength, and in the long run can cover more distance and do it more rapidly than any of the others. Such a driver resembles a climate which has enough contrast of seasons to be stimulating but not to create nervous tension, and which also possesses frequent storms whose function is to furnish the slight urging and checking which are so valuable in the total effect, although each individual impulse is almost unnoticeable."

Now, save as regards the fourth type, which cannot be said to exist in the tropics, it is possible to cite countries within the torrid zone furnishing examples of these varieties of climate. The first, the unstimulating, is that met with along tropical littorals, as, for example, the West Coast of Africa, in great forests like those of the Amazon, or in islands like most of the West Indies or the Polynesian archipelago. The second type, producing over-stimulation, can be found only at high altitudes such as exist in the Andes. Parts of Peru—as, for instance, the region of Cuzco—may be cited. The third type, where there is one favourable and one unfavourable season, may be exemplified by desert climates like those of the Northern Sudan or Mesopotamia. In both countries the winter is bracing and pleasant, and in both the long and trying summer is hot as Tophet. Hence it is not surprising that the former has been described as a country where white women lose their looks and white men their energy.

Speaking broadly, the seasonal changes of a tropical climate, if at all marked, are beneficial rather than otherwise. It is tropical weather that is to blame, and it is at fault because it has not the characteristics of what we call weather in this country. There is far too much climate and far too little weather in the tropics. One is reminded of the schoolboy's essay on marriage customs wherein he spoke of the state of having one wife which, according to him, is called "monotony." The simile is not a bad one, for in both cases the even tenor of existence may be punctuated by storms!

From what has been said it must be clear that an equability of temperature, a powerful sun, and a high degree of atmospheric humidity are the climatic factors which in the moist tropics at least militate against the comfort and well-being of the white settler. In the dry tropics, excessive dryness of the air, together with sun and heat, is operative, and this combination is frequently associated with electrical states of the atmosphere which may conceivably play a much more important rôle than has hitherto been attributed to them. Whether that rôle, however, is deleterious or the reverse remains to be decided. It may be a cause of mental irritability. On the other hand, it may exercise a beneficial, stimulating effect. Kullmer,[10] an American geographer, was inclined to think that possibly electrical phenomena accompanying the barometric changes which induce storms had much to do with the advancement of civilisation. It is conceivable that the comparative innocuousness of desert climates in the tropics is due to the frequency and force of electric disturbances. The air at times becomes very highly charged, and it is astonishing how a blanket on the slightest movement will crackle and spark. I would suggest that this is a line of investigation well worth pursuing. Considering the amazing electrical developments of late years, who can say that such a study might not lead to the discovery of methods whereby the stimulating and rejuvenating action of electricity might not be utilised to counteract the depressing influence of a hot and humid climate? In such climates the effects of a severe thunderstorm are often remarkable. I recall a suffocating night on the Magdalena River in Colombia when one could scarcely breathe, so great was the oppression of the atmosphere, and the remarkable change produced in half an hour by a violent outburst of electricity.

PSYCHOLOGICAL EFFECTS.

Whatever the factors at work, the effects they produce may be classed as physiological, psychological, and pathological. Of these the greatest are the psychological, for Cuvier's axiom, already quoted, must ever be borne in mind. The psychological effects are purely subjective and we are always conscious of them, which is by no means invariably the case as regards the physiological, and yet, though in many cases no proof can be advanced, the psychological effects are probably in every instance based upon physiological change. At any rate, it is better not to try and divorce them, but to consider the psychological effects as part of the physiological effects on the nervous system. It is true that these latter effects may be associated with psychological results, without there being any direct action on the nervous system, for the change may be induced in the circulatory or other apparatus, but the expression of the psychological effects must needs be through the brain. Although a consideration of the effects of a tropical climate on the individual may not supply data for determining the influence it will exert upon the white race viewed in the light of colonisers, yet this aspect of the subject cannot be wholly neglected. Indeed, it furnishes the greater part of the scientific evidence on which any conclusions can at present be formed. Unfortunately, the evidence is conflicting and far from being complete. I do not propose to discuss all the work that has been done on the physiological and pathological effects of tropical climates. It seems wiser, considering the magnitude of the subject, to refer very briefly to some of the more important observations made in the past and then to concentrate on recent contributions to the literature, commenting, where it seems desirable, on the statements and views which have been advanced and confining myself as much as possible to the hygienic aspect of the question.

BODY TEMPERATURE.

Naturally considerable attention has been directed to body temperature, but the earlier records leave much to be desired owing to the conditions under which the observations were made. There seems

however, now to be a general agreement that when one passes from a temperate to a tropical climate a slight rise of body temperature, rarely exceeding 1·5° F. occurs, while after arrival in the tropics the body temperature of the newcomer tends to remain slightly elevated. Adjustment of temperature, however, soon takes place in most cases, though there are certain individuals, obviously unfitted for tropical life, who do not possess the power of adaptation. Caspari and Schilling,[11] who carried out some interesting comparative experiments on metabolism in Germany and the West Coast of Africa, found that an ordinary and well-balanced diet had no influence on body temperature either in the acclimatised or non-acclimatised European. Neither has moderate exercise, but, according to Young, Breinl, Harris, and Osborne,[12] who conducted investigations in North Queensland, prolonged exercise does cause a rise of temperature even in acclimatised persons. It is important to take the temperature in the rectum, not in the mouth or axilla. As Leonard Hill[13] has pointed out, atmospheric conditions in the tropics undoubtedly impose a strain on the heat-regulating mechanism of the body. Hence the very effort to keep the temperature normal tends towards exhaustion, and unfavourable conditions of diet and clothing, at least when combined with considerable or severe exercise, raise the body heat.

SKIN REACTION.

Closely associated with the question of body temperature is that of skin reaction, because the regulation of body temperature is secured by the evaporation of water from the surface of the body as well as from the lungs. Aron,[14] in Manila, showed that the brown-skinned man possesses a more sensitive cutaneous heat-regulating apparatus than his white brother. This is presumably due in the first instance to colour, as brown skin absorbs more heat than white skin and hence more rapidly, as the result of nerve stimulation, the stage is reached when perspiration shows itself. Moreover, brown skin cools more rapidly than white skin. On this account, as well as for other reasons, tanning of the white skin is beneficial and the lack of it is doubtless, in part, a cause of the poor adaptability to heat which the white woman who lives indoors or carefully guards her complexion usually displays.

I have spoken about brown skin absorbing heat. What really happens is that the light rays pass through the cutis till they strike the pigment layer where they are converted into heat. In the case of the white skin the light rays pass right through and the conversion into heat takes place as the result of the action of the blood pigment. A thin skin is a useful asset in promoting conduction, for the horny layer is a very bad conductor of heat. The brown or black man, protected by his pigment, does not require a thick, horny layer, but it is significant that Priestley [15] has noted a coarsening of the skin of white women in tropical Australia. Had these women done field work their skins might have become tanned instead of thickened. Of two evils it were well to choose the lesser. Persons who do not perspire or who have a defective sudorific system are unsuited to residence in the tropics, and in the case of prospective settlers inquiry should always be made on this point. A defect of this kind may be transmitted to the offspring.

RESPIRATORY EXCHANGE.

Little need be said about respiratory exchange. The lungs, which by the evaporation of water from them aid the cooling process, weigh less in hot than in cold or temperate climates, because the place of the blood which passes to the warm body surface is taken by air. Pulmonary capacity is therefore increased, but the lessened number of respirations preserves the necessary balance. In the tropics the air which is inhaled is rarefied by heat and so contains less oxygen than cold air. The respirations being reduced in number and less oxygen inspired, less carbonic acid and water vapour are given off by the lungs. As a result there is a tendency to the retention of carbonaceous matter in the blood. So far as I can discover, no ill-effects have been attributed thereto, but it is conceivable that it may tend towards fatigue. Young [12] and his co-workers showed that the alveolar air at rest in inhabitants of tropical Queensland exhibited a lower carbon dioxide content than the European average.

BLOOD.

The blood is the life, and, as might be expected, numerous observations have been made in various parts of the world on the blood state of Europeans in the tropics. It is possible that they began with those of Mayer carried out at Java in 1840, when on bleeding his patients he noticed that their venous blood was much redder than he had found it when venesecting in Germany. His deductions from this phenomenon, however, concern basal metabolism, and will be considered later. There is some doubt as to whether climate alone can produce any change in the formed elements of the blood. There is no certain evidence that it produces anæmia, the pallor of old tropical residents being merely skin deep, due to a local vasomotor condition, a cutaneous ischæmia, as Musgrave and Sison [16] maintain. Certainly, so far as the Philippines are concerned, Chamberlain [17] has shown that the blood of white men after a year or more of residence is well up to standard. On the other hand, Mitchell,[18] a British naval surgeon, declares that the damp heat of the Persian Gulf produced a simple but severe anæmia in cases under his care. Unfortunately, he gives no blood counts, although he states that the blood was examined. His conclusions are not convincing.

It is possible that climate may produce changes in the hæmoglobin. Thus Plehn,[19] working in the Cameroons, found evidence of hæmoglobinæmia, while Gibbs,[20] in Manila, showed that ultra-violet light can transform oxyhæmoglobin into methæmoglobin. According to Harston [21] the blood of children in the tropics shows a diminution in the percentage of hæmoglobin, though the red cells are increased relatively to the fluid elements of the blood, because the latter is more concentrated owing to excessive perspiration. He considers the lessened hæmoglobin content to be due to: (1) The fact that heated air contains less oxygen per cubic foot than cool air; (2) the slower respiratory exchange to which reference has already been made; (3) the depletion of blood in the lungs which has also been mentioned.

Some sound work was carried out not long ago by Kop,[22] who, at Weltevreden in Java, investigated the blood of 93 normal healthy individuals—55 Europeans and 38 natives. The blood counts were made on films taken with due precautions before 9 o'clock in the morning from subjects with empty stomachs. In each case the red and white corpuscles were enumerated, the hæmoglobin index was determined, a differential leucocyte count performed, and the Arneth index noted. No difference of any kind was found between the blood of these people and that of dwellers in temperate climates, save that the natives had eosinophilia, doubtless due to infection with intestinal worms. Elsewhere a shift to the left in the Arneth count has been described, possibly indicating a lowered resistance to disease, but the records are not very satisfactory, and in all likelihood Kop's results are generally applicable. The lymphocytosis which has occasionally been observed is probably a pathological symptom not due to climate. It must, however, be noted that observations in the Egyptian deserts by Bickel, Loewy, and Wohlgemuth,[23] and amongst the Djerids of South Tunis by Grober [24] have conclusively shown that under the peculiar climatic conditions obtaining in these regions there is an increase in the erythrocytes and hæmoglobin. It has been suggested that the peculiar and intensive light conditions prevailing in the desert stimulate the blood-forming organs, just as experimentally the light of a mercury lamp induces in them a fresh activity resulting in red cell increase. It is conceivable that such a stimulant action mitigates the ill-effects of

these hot and arid regions, and renders them less trying, in the long run, than the humid tropics.

Probably of greater importance than the question of changes in the formed elements of the blood and the hæmoglobin is that of its chemical or physico-chemical constitution, though here we are on debatable ground. A consideration of the scanty literature on the subject emphasises the pressing need for bio-chemical work in the tropics. The bacteriologist, the protozoologist, the pathologist, and even the epidemiologist, have all thrown light upon tropical hygiene, but, with some notable exceptions, the physiologist, and more especially the bio-chemist, has not yet come into his own in this realm of research. I was sorry to see that some time ago the proposal to attach a bio-chemist to the staff of the London School of Tropical Medicine was negatived. His help would have been valuable even in this country, but there is a great field for him abroad, more especially in the direction of blood work. The Dutch, who are very much to the fore in all matters pertaining to tropical hygiene, have been quick to realise the importance of bio-chemistry in their tropical possessions. De Langen and Schut[25 26] estimated the sugar content of the blood in native Javans and Europeans and in rabbits, guinea-pigs, and hens in Java. In all it was high, and in the case of Europeans and of the animals considerably higher than is the case in Europe. This hyperglycæmia is almost certainly associated with a deficiency in calcium and a reduction in the cholesterin of the blood. The Dutch observers ascribe the condition to heat. Humidity, it is said, may also play a part by stimulating the sympathetic nervous system which regulates the function of the suprarenal glands. The hepatic glycogen is no longer stored up as usual, the sugar content of the blood increases, and an attempt is made to throw off this excess of sugar in the circulating blood. It is eliminated through the kidneys, the so-called renal glycosuria, or is burned up. To the latter event is ascribed the "low fever" of the tropics which, if the Dutchmen are correct, has a climatic, not a parasitic cause. As hyperglycæmia disposes to neuritis and polyneuritis and favours invasion by the tubercle bacillus it will be seen that this research has an important bearing on the subject we are discussing. The condition cannot be the same as the hyperglycæmia observed by McCay[27] in Bengal, and which he attributed to excessive carbohydrate diet, for it appears soon after the arrival of Europeans in the tropics.

De Langen and Schut[28] have also investigated the fat content of the blood. A reduction in cholesterin has already been mentioned, and two-thirds of the blood-fat is cholesterin. The total fat content is somewhat higher in Europeans than in natives. It would take us too far afield to consider all their findings and deductions, but it may be said that the matter may have important bearings on diet in the tropics, for the blood lipoids which constitute the fat core proper—that is, the finely emulsified fat present in the serum either in a colloidal or invisible form—would appear to be intimately concerned with cell life and function. The difference in the cholesterin content of the blood of natives and Europeans was not thought to be wholly due to differences in diet. De Langen[29] invoked a special function of the endocrine glands to explain it, while Verhoef[30] was inclined to attribute it to climate. Now, however, it would seem that de Langen[31] has revised his views and is prepared to put down the low cholesterin content, in native convicts at least, to a scarcity of fat in the diet. The matter is still sub judice, and I only mention it as showing how much we are in the dark as regards these difficult but suggestive problems. The percentage of water in the blood of healthy individuals in the tropics has been shown to be practically the same as that of Europeans at home—i.e., 78·6 per cent.

So far as *circulatory change* is concerned the observations are very contradictory. I would therefore merely mention that the Australian workers at Townsville[12] found that humid heat produced a rise both in blood pressure and pulse-rate, while de Jonge,[32] working in the Dutch East Indies, maintains that the maximum blood pressure of Europeans does not diminish as the result of prolonged tropical residence.

DIGESTION AND EXCRETION.

A hot climate at first stimulates digestion and the digestive functions, but the effect is evanescent, being soon followed by a diminution in appetite and some lowering of digestive activity, with an accompanying lessened desire for animal food. It is interesting to note that recent American experiments on dogs show that in hot weather the secretion of bile may strikingly diminish even if the food intake remains considerable.

The urinary excretion is diminished in the tropics, the daily output being about 500 to 700 c.cm., as against 1500 in temperate regions. The urine is concentrated, but it is a moot question whether or not it contains an equal amount of waste material to that found in the 1500 c.cm. Some say one thing, some another. Young,[33] in North Queensland, found the neutral sulphur content high, but was unable to say whether or not this was due to increased tissue metabolism. He noted a much higher specific gravity of the urine,[34] a diminution in the quantity of sodium chloride excreted and a lessening of the total nitrogen.

McCay,[35] in Bengal, did much work on Asiatics; but of more importance for our purpose are the observations of Campbell[36] in Singapore, a place where there is no cool season and the temperature averages 80° F. all the year round. There he found that race had no influence on the nitrogen partition and that for a European, a Eurasian, and several races of Asiatics alike the absolute quantities of total nitrogen, of urea nitrogen, and of uric-acid nitrogen were much lower than the standard figures for Europe. On the other hand, the percentages of urea nitrogen and uric-acid nitrogen did not materially differ from the standard, while the percentage of ammonia nitrogen was increased and absolute ammonia nitrogen was also often increased. McCay[27] did not estimate the creatinin nitrogen, dealing only with neutral sulphur. Campbell found the amount to be slightly lower than the European standard but the percentage higher.

In a Chinese, a European, and a Eurasian the total nitrogen per kilo of weight proved to be about the same as the standard. In other races it was lower. Campbell attributed the low results to the indirect effects of heat and humidity which lessen the desire for food and work, thus leading to poor physique and less muscular energy. This may be true in the case of the European and the Eurasian, but recent work by Read and Wang[37] at Peking in China, at a time when the weather was dry and cold, work carried out on Chinese and yielding results comparable with those of McCay, Campbell, and Young, would seem to show that the differences noted are entirely due to diet. In other words, an exogenous rather than an endogenous factor is at work, and the high cereal diets are probably the cause.

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(*Continued at foot of next page.*)

NATIONAL BABY WEEK CONFERENCE.

(Continued from p. 33.)

THE subject under discussion on the morning of July 3rd was the

Scope, Staffing, and Administration of an Infant Welfare Centre,

the points for consideration being well set out in an introductory speech by Mr. H. O. STUTCHBURY, the chairman. In regard to staff, the Ministry of Health had an open mind as to the relative values of a whole-time medical officer appointed by the local authority, a specialist in child welfare, and a general practitioner, always provided that the doctor had special knowledge of children's health. A medical officer doing nothing but children's work was apt to suffer from monotony, and there was, he thought, little to be said in favour of a rota of doctors, as continuity in advice and treatment must necessarily be lost.

Dr. W. G. WILLOUGHBY considered that it came within the scope of a welfare centre to procure or provide medical treatment for cases in which treatment was unlikely to be obtained otherwise. If the medical part of child welfare was universally carried out by private practitioners, the centres could confine themselves to dealing, at most, with minor ailments; at present this was not the case, and many children would remain untreated but for the work of the centres. The scope of the welfare centre was to fill any gap in the measures for preventing suffering to children, even if temporarily it ran up against other interests. An experienced medical chief was the first essential of a satisfactory staff, but Dr. Willoughby also placed great importance on highly trained health visitors for the homes. In Eastbourne the service of home helps had been found invaluable.

Dr. MABEL BRODIE said there were three sides to the work—educational, medical, and social—and the first and last could be carried out by competent volunteers. Talks should be given, where possible, on health, sanitation, psychology, mothercraft, and housecraft, and in some cases such subjects as gardening and poultry-keeping might be included. It was desirable that where special home treatment was recommended, it should be demonstrated at the centre. Many mothers had no idea how to make a poultice or administer an enema. Often there was no district nurse to show them, and the health visitor had not time. People going into the newer type of house required instruction as to the respect due to the bath and sanitary arrangements, if these are to be kept in working order. Dr. Brodie would like the centres to be in the nature of mothers' clubs rather than out-patient departments, and to provide reading and rest rooms, and, where possible, a bath, which would be greatly appreciated by the mothers. The medical side should be preventive, but we had not reached that ideal at present, and minor dressings at least should be done at centres in places where there was no district nurse. Efficient medical officers were a necessity; whether male or female, it was essential that they should love babies, understand mothers, and be acquainted with the social affairs of the district.

Dr. E. ROWLAND FOTHERGILL (representing the British Medical Association) said it was necessary to distinguish clearly between the centre and the clinic. The object of the centre should be educational and advisory, and medical treatment should not be given for any condition which, in the absence of the centre, would be recognised as calling for a doctor's attention. Mothers or children requiring medical treatment should be referred to the family doctor or, where there was no family doctor, to the clinic. The general practitioner was the pivot and anchor of the people's health, and every means of education and experience should be placed at his disposal.

Dr. HAROLD SCURFIELD said it sometimes seemed to be thought that babies and disease were invented for the benefit of the medical profession. The important thing was to get the necessary treatment and cure; it was useless to search out disease unless it was to be followed up by treatment. The panel system dealt with the worker, but there was at present no medical service at the disposal of the family.

The question of the advisability in urban areas of combining the functions of health visitor with those of other officers led to the expression of views on the whole more in favour of unification than against it.

Dr. W. E. HOPE (M.O.H. Liverpool), in a paper read in his absence by Dr. S. G. MOORE, gave some account of the evolution of public health work in Liverpool, and laid down the principle that certain preliminary training and experience were required for all health visitors, who, with this background, could readily assimilate special instruction to fit them for other branches of work.

Dr. F. E. WYNNE thought the same tests in regard to specialisation ought to be applied as in medicine or surgery. In both cases the worker needed to have a sound knowledge of the whole field first, and then the particular section chosen should be sufficiently wide to occupy the whole energies of the specialist. It was almost impossible to avoid some overlapping while different branches of public health work were under separate Government departments.

In the final session on

Housing in Relation to Infant Welfare

Dr. MARION COCKERELL gave a moving picture of the tenement house as she knew it in the borough of St. Pancras. It was common for a whole family to live in one room, and in most tenement houses there were no conveniences. Cooking had usually to be done on an open fire, and there was one sink, one w.c., and one dustbin for the whole house, all of which were only as clean as the least clean inhabitants. A house might be healthy as a whole, and yet people in certain rooms might be living in bad conditions. Those in the basement got no sunshine, and the babies showed poor resistance to disease of any kind. There were two possible remedies: first, to build new houses, self-contained and easy to keep clean; and secondly, to help some of the population to move into the country and live, not in mere suburbs, but in garden cities.

(Continued from preceding page.)

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(This lecture will be concluded in a coming issue.)

OPEN-AIR TREATMENT OF SURGICAL TUBERCULOSIS.

A VISIT TO ALTON.

THE vice-presidents, companions, and local honorary secretaries of the Queen Alexandra League were entertained by Sir William Treloar at Alton, Hants, on July 4th, on the occasion of the visit of Sir Clifford Allbutt. Sir William Treloar, before introducing Sir Clifford Allbutt, stated that the League was founded 17 years ago by Queen Alexandra for the purpose of collecting money for the Lord Mayor Treloar Cripples' Hospital and College, and during last year had raised over £9000.

Address by Sir Clifford Allbutt.

Sir Clifford Allbutt, after expressing his great pleasure at having this opportunity of seeing the remarkable work in progress at Alton, quoted Sir Anthony Bowlby as saying that the glory of Alton had abated surgery and that the old treatment of excision of joints had passed into oblivion. He gave a brief outline of the progress of medical knowledge in respect to tuberculosis, recalling the coddling treatment of this disease when even the keyholes were stuffed with cotton-wool in order to lessen the possibility of a draught reaching the patient. Tuberculosis, spread by infection, was a general disease, therefore local excision was not the best treatment. The value of open air, good food, and above all sunlight as means to increase the natural resistance was very potent. He stressed the importance of precise dosage and careful distribution in sunlight treatment in order that perils should be avoided and successes won. From Hippocrates onwards the law of reciprocal action, the ability of Nature to hit back, had been continually demonstrated. The intrinsic natural reaction of the individual was often strong enough to withstand infection. Open air increased the fortifications of the physiological reactions and replaced natural exercise in keeping the patient healthy. Alton was fortunate in having a pavilion with 50 beds at Hayling Island. Sir Clifford Allbutt paid a tribute to Rollier for his work in heliotherapy and occupation therapy; at Alton 14 teachers and four technical instructors were employed to keep the patients happily occupied. To the importance of early treatment and the value of following up cases after discharge he largely attributed the successful results, exclusive of accidents, in 95 per cent. of the cases sent to Alton. Sir Clifford Allbutt concluded by stating the two modern events which had given him the greatest pleasure—the remarriage of surgery with internal medicine after their long divorce, and the formation of an institute of comparative medicine at Cambridge.

The Work at Alton.

The work at Alton is too well known to need detailed description. Amongst its many interesting features may be mentioned the observation ward where each new patient admitted is kept for a period of at least a fortnight in quarantine. Each child occupies a separate cubicle and during his stay the case is worked up, his educational standard ascertained, X rays taken, and necessary splints manufactured. After that the patient is warded—or rather gradually acclimatised to open air and sunlight—not according to age or medical classification, but according to his standard of intelligence and school class. Non-inflammable perforated celluloid plasters and various splints and methods of extensions invented at Alton are in use with remarkable results. The difference in degree of pigmentation was considerable, every child having an individual reaction to sunlight. The red-haired, much freckled white-skinned type are unable to tolerate exposure and have consequently a less hopeful prognosis. The beds in the "Hampshire" ward are heated electrically, Alton being the first hospital to adopt this method. In sharp contrast to cases of surgical tuberculosis as seen in a general hospital or out-patient department is the total absence of muscular wasting. This is attributed to the action of open air on the skin—a loin cloth and sun hat is generally the only covering. The effect of fresh air on naked skin has been proved by Dr. Leonard Hill, Dr. Argyll Campbell, and Sir Henry Gauvain to increase greatly the metabolism of the body. It is stated that the pigmented patients at Alton, even though suffering from surgical tuberculosis, have their working capacity increased on an average by 37 per cent. beyond that of normal healthy children.

Alton is a striking example of what a hospital, situated in ideal country surroundings, supplying its own vegetables, fruit, pigs, and eggs can do for its patients.

MEDICINE AND THE LAW.

LIABILITY FOR IMPURE WATER-SUPPLY.

AFTER litigation extending over two years the High Court of California, U.S.A., has recently awarded substantial damages, to be paid by the city authorities, to 19 persons who contracted typhoid fever at Pittsburgh, in consequence of a breakdown in the apparatus for purifying the city's water-supply. This is drawn from the Sacramento river, the water of which is recognised as unfit for drinking until properly treated, and at a date preceding the outbreak of typhoid, from which the plaintiffs suffered, the chlorinating plant was for a time inoperative owing to the fixtures upon a drum containing chlorine gas not permitting of its attachment to the pumping system until the necessary alteration of the fittings had been made. The court has held that an obligation lies upon the city authorities who distribute the water to use all reasonable precaution to render it fit and wholesome. Presumably, in terms familiar in our courts, the judgment was to the effect that there was negligence in not securing a supply of chlorine gas in a receptacle suitable for use in the machinery installed for the purpose, and in allowing water to be supplied in a condition known to be unsafe, and without warning to the public. Subject to any special provision not likely to be inserted in any water company's Act, there can be no reason why such an action should not lie in this country in similar circumstances.

AUTHORITY TO ENGAGE AN AMBULANCE.

At Romford County Court recently his honour Judge Crawford tried an unusual action, in which the Romford Urban Council sued a Mr. Thwaites for payment for the use of the town ambulance to convey him to a London hospital. Mr. Thwaites denied liability and said that he could have travelled by omnibus or similar conveyance, and that the ambulance had been ordered by his medical attendant, Dr. V. Levy, without his authority. Accordingly the Council had joined Dr. Levy as a defendant and he was represented at the trial by Mr. H. F. Dickens, briefed by the solicitor to the Medical Defence Union. As to the main facts there was no dispute. Dr. Levy had attended Mr. Thwaites, who was suffering from severe abdominal pains, and on receiving a second summons decided that the case was one of urgency, and accordingly, on his way to his patient's house, asked for an ambulance to be sent at once to take him to a hospital. He told the court that he would have been running a great risk if he had allowed any delay to occur. On Mr. Thwaites saying that he could have travelled in an omnibus or tram-car Judge Crawford asked, "Don't you think that the doctor was the best judge of that?" In giving his decision, Judge Crawford compared the case to that of the captain of a ship who when out of reach of his owners had to come to a decision and take responsibility on their behalf. A doctor in a similar case of great urgency became, in his opinion, an "agent by necessity" and was fully justified in taking whatever steps he might think necessary in his patient's

interest. Ambulances were modern inventions to secure the safe conveyance of patients, and though he knew of no parallel case, the principles of the common law would apply. If the man had died he had no doubt that his relatives would have blamed the doctor if he had not taken proper precautions. Such cases must often arise, but the question of payment had not before been contested by the patient. The defence was one of the most discreditable he had ever known. He agreed that the matter was of great interest to the general public and to the medical profession, and in giving judgment with costs against Mr. Thwaites for the amount claimed by the Urban Council, he ordered him to pay Dr. Levy's costs and certified for the costs of counsel who appeared for him. Dr. Levy is to be congratulated and also the Medical Defence Union, who no doubt will record the case as a valuable precedent for the application of the law of "agent by necessity" in medical matters.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Treatment of G.P.I. by Inoculation of Malaria.

INTEREST has been aroused by a further communication made to the Vienna Neurological Society by Prof. Wagner-Jauregg, dealing with the results of treating 300 severe cases of general paralysis of the insane by infecting them with tertian malaria. In 1890 Prof. Wagner-Jauregg produced a "curative" febrile condition in such patients by inoculating old tuberculin (Koch). Cases were taken without selection, and it was apparent that the febrile cases had a better expectation of life. He then combined the tuberculin treatment first with mercurial treatment, later with salvarsan, and the results were comparatively satisfactory. In 1909 a report on these results was given at the International Medical Congress in Budapest; some of the patients referred to in that report are still alive and actively working. Of the total number of 86 cases, 23, or 27 per cent., could be classified as having regained full fitness for work; 50 per cent. had lasting remissions. Early cases had better chances of recovery than inveterate cases. Improved results were obtained by the use of polyvalent typhoid vaccine (Besredka), which produced more lasting febrile attacks, and remissions after its use were decidedly longer. Wagner-Jauregg noted that an intercurrent infectious disease, occurring in such patients when they were under the influence of tuberculin or typhus vaccine, produced a definite cure. In 1917 he resolved to infect such patients with the plasmodium of tertian malaria. Nine patients were taken as a first experimental group; of these, 6 are at present (i.e., six years later) perfectly well and fit for work; three had long periods of remission. Having kept this first group under observation for two years, Wagner-Jauregg then conducted large-scale experiments, and his clinic now contains records of over 300 cases treated in this way. The method seems to be the most successful of all known and is applied as follows: Tertian plasmodia obtained in vivo are injected intravenously; an incubation period of 8–14 days follows, and then comes the typical attack. The patient is allowed to undergo 8–10 attacks of fever, and quinine sulphate is then given in the orthodox way; this treatment is followed up by neo-salvarsan injections, which have lately been combined with cerebro-spinal drainage. In 1920 a series of 25 cases, with 9 complete cures, was demonstrated at the meeting of German natural scientists at Nauheim. In 1922 the number had gone up to 294 cases, with 112 complete cures, and 88 long remissions (reported at Leipzig). The improvement is noted some time after the fever treatment; it continues to increase gradually until a full remission is observed. It was found possible to transform an incomplete remission into a complete one by repeating the whole series of treatment. Reports of observations of the same nature have come from numerous other places—e.g., Graz, Heidelberg, Göttingen, and Munich. Another important observation has been made by Prof. Kyrle (assistant of Prof. Zinger) on the treatment of secondary manifestations of syphilis by injection of tertian malaria with very satisfactory results. The experiments are not yet concluded, the time being still too short for definite conclusions to be drawn, but there seems reason to envisage the possibility of radical cure of syphilitic infections by combined malaria-salvarsan treatment.

Closing of All Schools for Dental Mechanics.

By an order of the Board of Health the existing schools for technical dentistry open for non-medical pupils will be permanently closed at the end of the summer term. This is the final result of the "Dental Mechanics Act," introduced in July, 1920, by which all dental work in the mouths of patients is handed over to medical men only. The dental mechanic will in future only serve as an apprentice or qualified workman in the workshop of a dental surgeon; instruction in technical dentistry will be obtainable exclusively in dental clinics, open only to doctors of medicine. The non-medical dentists at present practising will retain their position, which will even be a little extended in so far as they are permitted to extract teeth and to fill and treat diseased roots. The apparatus of the once famous Dental Mechanics School of Vienna will be handed over to the Vienna Dental Clinic. The Act also terminates dental practice under titles such as "doctor of mechanical dentistry" and "licentiate of dentistry" obtained abroad.

Vaccination Against Measles.

At a recent meeting of the Vienna Medical Society a report from the "Mautner Markhof Children's Hospital," presented by Prof. Leiner, recorded results obtained by the method of Dr. Degkwitz, of Munich, of vaccination against measles. This disease has a tendency to become very dangerous every third year, especially with children below the age of one year. In the 1919–20 epidemic older children were also frequently fatally affected, and in 1922–23 the winter season was again accompanied by severe mortality, particularly in several children's hospitals. Dr. Degkwitz took 60–80 g. of blood from children in the convalescent stage of measles and prepared from it a serum, of which 3 c.cm. were injected intramuscularly into children in direct contact with measles patients. The earlier this prophylactic immunisation took place the better were the results seen. If set up on the second to the fifth day after contact it was still efficacious, being less protective on the sixth to the eighth day, although even then the course of the disease was mild and transient. The control experiments conducted in Vienna have fully confirmed the claims made at Munich, and the serum will be manufactured in large quantities for use in private practice.

Prophylactic Inoculation of Dogs Against Rabies.

In my letter of June 13th[1] a paragraph referred to anti-rabies measures in Austria. The following information may now be added. Prophylactic inoculation of dogs against rabies has been undertaken in Vienna; of 90 animals inoculated according to Pasteur's method, and then subjected to an "experimental" bite by a diseased animal, not one developed rabies. There is a growing desire among the public for general anti-rabies inoculation of the dog population. Four injections of vaccine on four consecutive days would, it is estimated, cost 30,000 kroner (2*s.*).

Autumn Post-Graduate Courses.

The Medical Faculty of Vienna will hold a post-graduate course for Austrian and foreign practitioners from Sept. 17th–29th. Lectures will be as follows:—Sept. 17th: Errors in Diagnosis of Diseases of the Eye; Diagnosis and Treatment of Trachoma; Cataract; Strabismus.—Sept. 18th: Vertigo; Pain in the Study of Otology; Important Surgical Indications in Diseases of the Ear; Deafness; Tonsillectomy.—Sept. 19th: Traumatic Neuroses; Diagnosis

[1] THE LANCET, June 23rd, p. 1284.

of Early Progressive Paralysis; Treatment of Progressive Paralysis; Psycho-analysis.—Sept. 20th: Tuberculosis in Children; Stridor in Children; Parasitic Worms in Children; Differential Diagnosis of the Exanthemata.—Sept. 21: Deficiency Diseases; Albuminuria in Children; Syphilis Neonatorum; Advice to Mothers.—Sept. 22nd: Prevention of Goitre; Modern Cardiac and Vascular Remedies; Diseases of the Liver; Disorders of Metabolism.—Sept. 24th: Diseases of Internal Secretion; Tuberculosis of the Lungs; Heart Disease; Intestinal Diseases.—Sept. 25th: Distinction Between Obstetric Indications in the Clinic and in Private Practice; the Possibility of Restoration of Function by Operation in Gynæcology; "Hormone-therapy" in Gynæcology and Obstetrics; Causes of Danger to the Child During Pregnancy and Birth; the Relation of the Special Sense-Organs with the Genital Organs in the Female.—Sept. 26th: Indications for and Success of Radiotherapy in Gynæcology; New Methods of Examination in Gynæcology and Obstetrics; Metritis, Endometritis, and Uterine Disorders; Gonorrhœa of the Uterus; Urology for the Practitioner; Tubal Pregnancy; Delayed After-birth.—Sept. 27th: Modern Treatment of Syphilis; Treatment of Eczema; Radiotherapy; Sexual Offences.—Sept. 28th: Indications for Urgent Operation; Surgical Indications in Diseases of the Biliary Tract; Surgery of Accidents; Surgery of the Mammary Glands.—Sept. 29th: Ætiology and Diagnosis of Intestinal Cancer; Treatment of Fractures by Simple Means. A Clinical Course will follow from Oct. 1st to 6th. Those intending to take the post-graduate course should send name, address, and title to Dr. Kronfeld, Porzellangasse 22, Vienna. Fee for Austrians and Germans, 25,000 kroner; for Bulgarians, Jugo-Slavs, Poles, Russians, Czecho-Slovaks, and Hungarians, 100,000 kroner; for other foreigners, 200,000 kroner. Other courses, beginning on July 2nd, August 1st, or Sept. 3rd, will be held in the following subjects: (1) Anatomy, Medical Chemistry, Physiology, History of Medicine; (2) Forensic Medicine; (3) Internal Medicine; (4) Diseases of Children; (5) Neurology and Psychiatry; (6) Surgery and Orthopædics; (7) Rhino-laryngology; (8) Ophthalmology; (9) Otology; (10) Gynæcology and Obstetrics; (11) Skin and Venereal Diseases; (12) Urology; (13) Radiology.

June 29th.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Death of Dr. Hermann Biggs.

Dr. Biggs became ill on June 2nd in his holiday camp at Little Moose in the Adirondacks. Returning to his home in New York, the State health commissioner never rallied and died on June 28th. The diagnosis of broncho-pneumonia was confirmed by autopsy, for Dr. Biggs had particularly requested his friend, Prof. Ewing, of Cornell University to perform this service. Hermann Michael Biggs was born in Trumansburg, N.Y., on Sept. 29th, 1859. After graduating A.B. Cornell in 1882 and M.D. Bellevue Hospital Medical College in 1883, he studied in Berlin and Griefswald. In 1895 he directed the production of the first diphtheria antitoxin in this country. He has been director of the Rockefeller Institute of Medical Research since its organisation in 1901. In 1900 he became general medical officer of the New York city health department, with which he had then been connected for 12 years. He was instrumental in establishing the New York City bacteriological laboratory, the first municipal bacteriological laboratory in the world, and quickly made a reputation as one of America's leading bacteriologists. He remained with the city health department until 1914. The mortality statistics in New York City underwent a rather startling change during his administration, the general death-rate falling from 18·6 per 1000 in 1902 to 13·78 in 1913. The corresponding rates for the State of New York were 14·4 per 1000 and 15·4 per 1000 respectively. During this period he was largely responsible for formulating and directing the campaign against tuberculosis in New York that was so warmly commended by Koch in 1908, and that has been so successful. In January, 1914, Dr. Biggs was appointed Commissioner of Health to New York State—a post which he had three times previously declined. In this position, as in his former post with the city, Dr. Biggs was not only responsible for a great body of wise legislation, but he showed a wide constructive imagination in his work of popular education. During the war he was a member of the Relief Commission of the Rockefeller Foundation, he attended the international conference at Cannes, which gave rise to the League of Red Cross Societies, and subsequently was, for a short time, medical director of the League. Both the conference and the League secretariat profited greatly from his unusual executive ability.

His life was filled with fruitful and unselfish endeavour—we have listed above only a part of the distinguished services which he gave to his country and to the world. There is no doubt he might have made a fortune by the private practice of his profession. He preferred to spend himself in a cause which even in America is not well-paid, but which, thanks to the fine example of such pioneers as he, is yearly absorbing more and more of the finest minds in medicine.

American Medical Association Convention.

Signs are not wanting that the whole body of the profession is looking more and more towards methods of early diagnosis and prophylactic treatment. Thus the opening address to the A.M.A. Convention, held this year at San Francisco, brought strongly to the attention of delegates that the objects of the Association are to promote not only "the science and art of medicine" but also "the betterment of public health." Dr. R. L. Wilbur, of Stanford University, the president-elect, reminds us that we "can make our particular civilisation secure only by developing and controlling our food-supply and housing, holding aloof our enemies, particularly the microscopic ones, keeping up proper physical standards of individual and group health, and having ideals of service and religion that make life coöperative and wholesome." But while modern civilisation calls for public health legislation and the health supervision of industry, the individuality of the physician must be conserved. "The voluntary association of two men, one giving and one seeking relief, is at the heart of the art of medicine."

The chairman of the Council on Health and Public Instruction announced that a subscription list of 12,800 has already been secured for *Hygeia*, and judging by the high standard which this journal is maintaining—the July number contains an admirable article by Dr. Victor C. Vaughan on Small-pox Before and After Jenner—this circulation must certainly increase.

June 29th.

The Services.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. J. G. Gill retires on ret. pay.

Maj. E. V. Aylen to be Lt.-Col. to complete estabt.

TERRITORIAL ARMY.

General Hospitals: Maj. A. G. Gibson relinquishes his commn. and retains the rank of Maj.

Capt. J. W. Stretton relinquishes his commn. and retains the rank of Capt.

General List: Capt. T. D. Webster resigns his commn. and retains the rank of Capt.

J. D. M. Cardell to be Lt.

TERRITORIAL DECORATION.

The King has conferred the Territorial Decoration upon Lt.-Col. (Bt. Col.) A. B. Gemmel (retd.), Majs. A. B. Murray and H. M. Fort, Capt. E. P. Minett (ret.), and Capt. and Qr.-Mr. N. Greenwood.

SMALL-POX IN GLOUCESTER.

STATEMENT BY THE MINISTRY OF HEALTH.

IN view of the public attention attracted by the outbreak of small-pox at Gloucester, the Ministry of Health has issued a statement to the following effect.

Origin of the Outbreak.

The outbreak at Gloucester was not dealt with as soon as it might have been, because of the refusal of the local medical officer of health to admit the presence of small-pox on a large scale in the city. There were, however, admitted cases of small-pox as early as April, and he was advised of the danger by the Ministry of Health early in May on cases of small-pox occurring at places as distant from Gloucester as Liverpool and Abertillery, the source of infection in which was traced to Gloucester. At the end of May, a medical officer of the Ministry of Health, present in Gloucester on a public inquiry, visited various suspected cases reported to him by medical practitioners which he diagnosed as small-pox. The medical officer of health did not agree and Dr. A. F. Cameron, medical superintendent of the M.A.B. Small-pox Hospital at Dartford, was then invited to the city and agreed with the diagnosis of the medical officer of the Ministry of Health. A subsequent house-to-house visitation by officers of the Ministry of Health established the existence of epidemic conditions beyond dispute. The local authority dealt with the situation by entrusting charge of it to Dr. W. H. Davison, senior assistant medical officer of health, Birmingham. A special hospital was set up, special vaccination stations were established, and all contacts were traced as far as possible in view of the time which had been allowed to elapse. While fresh cases are still occurring, the situation is fairly in hand, though there is urgent need of vaccination of the population.

The Present Distribution of Cases.

The table (the figures in which are subject to revision) shows the number of cases of small-pox reported during each of the four weeks ended on June 9th to June 30th in the various sanitary districts of the country.

District.	Week ended June—			
	9th.	16th.	23rd.	30th.
Basford R.D.	3	—	—	—
Bentley-with-Arksey U.D.	—	5	2	1
Heanor U.D.	5	1	4	—
Doncaster Boro'	—	2	—	—
Middlesbrough C.B.	2	—	1	—
Nottingham C.B.	1	—	—	2
Alfreton U.D.	—	—	1	1
Stockton-on-Tees Boro'	4	—	1	—
Clowne R.D.	1	—	1	—
Doncaster R.D.	2	4	10	1
Stapleford R.D.	—	5	—	—
Hereford City	—	—	1	—
Long Eaton U.D.	—	—	5	2
Cheltenham Boro'	1	—	1	—
West Bromwich C.B.	—	—	—	1
Gloucester C.B.	27	51	78	90
Dursley R.D.	—	—	—	1
Gloucester R.D.	—	3	3	—
East Dean and United Parishes R.D.	1	—	4	3
Stroud, R.D.	5	1	—	1
Cirencester U.D.	1	—	—	—
Stroud U.D.	1	—	2	—
Westbury-on-Severn U.D.	—	—	1	—
Cardiff C.B.	5	—	—	1
Lydney R.D.	1	—	—	—
Wheatenhurst R.D.	—	2	—	1
Risca U.D.	—	1	1	—
West Ham C.B.	—	2	—	—
Martley R.D.	—	—	1	—
Warsop U.D.	—	—	15	2
Belper U.D.	—	—	1	—
Birmingham C.B.	—	—	1	2
Kirkby-in-Ashfield U.D.	—	—	6	11
Millom U.D. (suspected)	—	—	—	2
Rhondda U.D.	—	—	—	7
Smethwick C.B.	—	—	—	1
Port of London	—	—	—	1
	60	77	140	131

R.D., Rural District. U.D., Urban District.
C.B., County Borough.

It will be seen that the total number of notifications for these four weeks is 408—as compared with 151 in January, 154 in February, 214 in March, 141 in April, and 112 in May.

Help in Diagnosis.

The particulars given as to the outbreak at Gloucester indicate the dangers of incorrect diagnosis. It is the duty of the general practitioner to notify small-pox to the medical officer of health, and if he is in doubt as to diagnosis he consults that officer. If in his turn the latter has any doubt, he applies to the Ministry of Health and the medical staff of the Ministry at once assists him by advice on the spot as to diagnosis and as to the action which should be taken to stamp out infection locally and prevent its spreading. In view of the number of calls now being made on the Ministry and the limited staff available, arrangements have been made by which medical officers of health, especially expert in small-pox, are ready to give immediate help as required in each of 12 districts into which the country has been divided for this purpose.

Vaccination in Relation to Further Spread.

The statistics show that the incidence of small-pox at present is very widely spread over the country. The number of notifications in the first six months of the present year is largely in excess of the notifications for the whole of last year, and is out of all comparison with the experience recorded since the last epidemic period, 1902–04. In view of the extent to which vaccination of infants has ceased (the percentage of vaccinations for the whole country in 1921 being 38·3 per cent. of births, as compared with 70·9 per cent. in 1907), and in view of the rarity of revaccination among the adult civil population, the Ministry of Health regard the situation with concern and hold the view that there is distinct risk of an outbreak of a serious character. The only practical remedy, now that the infection has been introduced, is increased recourse to vaccination, and the Ministry of Health would urge that this remedy should be made use of as widely as possible. Vaccination can be obtained free of cost by reference to the public vaccinator in the area, who uses lymph of approved quality supplied by the Government Lymph Establishment at Hendon. The reserve of tubes at Hendon is well over a million at present, and can be expanded as required.

MANCHESTER: CARE OF THE BLIND IN THEIR HOMES.—At the annual meeting of the Manchester and Salford Blind Aid Society held at Manchester on July 5th, Mr. E. D. Macgregor, of the Ministry of Health, and other speakers paid a tribute to the society's good work in the care of the blind in their homes. Founded in 1900, the society now accommodates 20 blind men and 20 blind women at the Memorial Home of Rest in Southport, and also gives a holiday there to about 400 blind persons each year; at another home 30 homeless blind women are provided for, and at a third home are 30 more blind of both sexes. According to the latest returns some 35,000 persons in England and Wales are blind within the definition of the Ministry of Health—i.e., so blind as to be unable to perform any work for which eyesight is essential, but it is possible that the actual number is nearer 45,000. Of the 35,000 more than 55 per cent. are over 50 years of age, and approximately 50 per cent. are untrainable and unemployable, blindness in a considerable number of cases being accompanied by other physical or mental defects arising generally from the same cause as produced the blindness. Venereal disease is the largest single contributory cause of blindness, and accounts for 25 per cent. of the cases. There is some reason for believing that the incidence of blindness is declining and it is clear that ophthalmia neonatorum is decreasing. Mr. Macgregor, in outlining the organisation he conceived to be necessary for the blind in a city like Manchester, said that no city in the country was better placed for securing such an organisation than Manchester. The Corporation of Manchester, said Mr. Macgregor, had not so far as he knew yet spent one penny as an authority under the Blind Persons Act, and it was three years since that Act was passed, but there were signs of Manchester moving in the right direction in this work.

Public Health Services.

THE HISTORY OF PUBLIC HEALTH EFFORT IN MANCHESTER.

AN illuminating and suggestive chronicle of the activities of Dr. James Niven, the late medical officer of health, while in the service of the Manchester Public Health Committee, since 1894, is given in a recently published manual,[1] which includes also an account of the work achieved by the committee in so far as Dr. Niven himself had any personal share in it. The chronicle is that of an unfinished task. Dr. Niven would like to see certain branches of public health come under the medical officer of health as coördinating and directing head, notably first the work of the cleansing department, which needs to be directed in subordination to the sanitary requirements of the city, as interpreted by the city's adviser in public health matters. This is equally true with regard to the department which deals with unwholesome foods. The control of infectious disease and the sanitation of schools should similarly, according to Dr. Niven, be placed under control of the medical officer of health, as they originally were, in the same sense as the control of tuberculosis is his responsibility. He believes that by far the most important influence which has governed the improvement of the public health in Manchester, apart from economic conditions, has been the removal of organic filth, whether within or without the habitations of the people. Probably the next in importance has been the control of infectious disease. No less weighty in their effects have been the economic advance of the town and the consequent diminution of poverty, though it is not easy here to trace cause and effect. Much of the bad housing in Manchester is inseparable from the removal of filth. Improvements of a positive character, such as the institution of parks, the physical care and training of children, the provision of public baths and washhouses, have also contributed much to the health of the city. The provision of an abundant and pure water-supply and of a varied food-supply of good quality has also been a factor in health, and the part played by education has not been small.

The annual health reports for the city of Manchester date back to 1868, when Dr. John Leigh was appointed the first medical officer of health, and the city had an estimated population of 345,295. From 1832 until this period the annual death-rate remained at about 32 per 1000. In Dr. Leigh's report for 1869, he records that so numerous were the inhabited cellars in Manchester a few years ago that it might well have been considered a city of cave-dwellers. Under the heading of infectious diseases many practical suggestions are given. Noteworthy are the remarks on "overlooked cases" in scarlet fever, one of the most potent causes of the spread of this disease. Measles is regarded as peculiarly a disease of poverty—that is, in so far as the death-rate is concerned. Tuberculosis, on the other hand, is described as a poverty-making disease, and it is suggested that a high percentage of the existing poverty is attributable to this cause. It may come as a surprise to many that the staff employed in 1921 in the public health department, under the medical officer of health reached a total of 861; included in this total are 215 at Monsall Fever Hospital and 186 engaged in tuberculosis work; health visitors account for 62, maternity and child welfare centres 40, and in the sanitary department 231 persons were employed.

In a final review of the work achieved during his tenure of office Dr. Niven expresses gratitude for the constant support given him by the medical profession, without which no public health service can be successful. On this cordial note does Dr. Niven bring to an end a survey of his stewardship as medical officer of health of the city of Manchester, a survey that may be read with profit by every medical officer of health in Great Britain and beyond.

[1] Observations on the History of Public Health Effort in Manchester. By James Niven, M.A., M.B., LL.D. Published by the City of Manchester. John Heywood, Ltd. 1923. Pp. 230.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are the principal health statistics of a group of boroughs of varying size for the year 1922:—

Name of borough.	Estimated population (mid-year).	Birth-rate.	Death-rates per 1000 of population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Respiratory with influenza.	Infant mortality		
							Legit.	Illegit.	Maternal mort. in childbirth.
Halifax C.B. ..	100,500	15·9	14·9	1·1	—	—	112	75	6·2
Warrington C.B.	79,150	22·6	12·1	1·7	0·9	3·2	70	175	2·8
West Bromwich C.B.	76,260	24·1	14·1	0·9	0·8	4·6	86	141	5·5
Guildford B. ..	24,950	17·0	11·6	0·8*	1·4	2·7	40	111	0·0
Leamington B...	28,740	18·0	13·9	1·1	1·3	2·3	58	55	11·6
Shrewsbury B. .	31,240	19·5	13·3	1·5	1·6	3·3	43	138	3·3
Watford B. ..	46,610	19·0	9·6	1·0	0·9	2·3	55	100	3·3
Yeovil B.	15,280	17·6	10·4	1·0	1·6	2·0	53	333	3·7

C.B. = County borough. B. = Borough.
* Pulmonary tuberculosis only.

Halifax.

Dr. Cyril Banks, in reviewing the records of Halifax, points out that the general death-rate and infantile mortality rates are not good, and that the record of deaths of mothers in childbirth for 1920 and 1921 is a sad one. Although infantile mortality has shown a great drop in the last 30 years, there is no decline in neo-natal deaths, and the ante-natal clinic is not yet a success. Dr. Banks unhesitatingly condemns the Goux pail conservancy system, which is still the system in most general use for dealing with human excreta. An effort is being made to do away with tips and to adopt an up-to-date method for dealing with household refuse. An effort is also being made to deal with smoke abatement more effectively, and lectures have been arranged for stokers. A movement has been made towards the avoidance of overlapping (coördination) by employing the health visitors to visit tuberculosis cases. Apparently there is an idea prevalent in Halifax that an untrained woman may conduct the delivery of a midwifery case where a doctor has been engaged. Amongst other needs mentioned by Dr. Banks are properly constructed scarlet-fever wards, and improvements to the public slaughter-house.

Warrington.

Dr. G. W. N. Joseph mentions that, in these days, when economy is so necessary, there is room for a great advance without much expenditure by educating the people in the principles governing health. Housing is still the urgent question; 37 municipal houses were completed during the year, and 36 more were nearly completed. The points considered in allocating municipal houses are overcrowding, expectant mothers, occupation of bedrooms by adults of opposite sexes, husbands forced to live apart from their wives, and tuberculosis. There are still 673 overcrowded applicants on the waiting list. There are also 602 applicants not overcrowded, and 134 who live outside but mostly work in the borough. There is much profiteering among those who let lodgings, so that the lodgers are "taken in" in a double sense. "Unfit" houses cannot be closed.

The following are weekly rents of some of the new houses, including rates:—

	s.	d.
Wooden huts with two bedrooms	10	7
" " " two smaller bedrooms	7	11
Concrete houses (Dorman Long system) with sitting-room, three bedrooms, bath-room	16	3
Brick houses (Type B—Parlour and three bedrooms and bathroom)	16	3
Brick houses (Type A—Three bedrooms and bath-room)	15	7

West Bromwich.

Dr. R. Woolsey Stocks reports that the sanitary inspectors have done a lot of hard work to improve the "appalling" condition of many of the dwellings. More new houses are urgently required, not only to replace those unfit for human habitation, but to enable those people at present living under conditions of dangerous and degrading overcrowding to find adequate accommodation. Diphtheria was prevalent and the case fatality was over 20 per cent. The doctor was often not called in early enough, owing to unemployment, to enable antitoxin to be used effectively. Dr. Stocks also thinks resistance was lessened owing to underfeeding, due to unemployment. On the other hand, it is satisfactory to learn from the school report that there was a marked decline in the number of cases of malnutrition, attributed to the satisfactory arrangements made for feeding the school-children and for the relief of distress. Dr. Stocks points out the need for a V.D. centre at West Bromwich. Although railway fares are paid to Birmingham on application, this system interferes with secrecy, and is not utilised by patients. Dr. Stocks draws special attention to the increase in maternal mortality in childbirth, due to an increase in puerperal sepsis. Dental work in the schools is having an effect: 61·5 per cent. of the routine inspected school-children were referred for dental treatment in 1922, as compared with 71·8 per cent. in 1921. A trained masseuse is employed to administer remedial exercises, and the two supervisors of physical education are actively at work.

Guildford.

Dr. R. W. C. Pierce reports that smoke abatement is being taken up in earnest. The Corporation electricity works, which was previously the worst offender in the town, now boasts a smokeless chimney owing to the installation of mechanical stokers. The dental clinic for mothers and children under 5 is doing good work; 25 mothers were fitted with dentures during the year. The Council pay a subsidy of £100 a year to the Queen's Jubilee Nursing Association to enable them to maintain a fourth midwife for the district.

Leamington Spa.

Dr. W. L. Goldie estimates that 65 per cent. of the population under 14 are absolutely unprotected in the event of an outbreak of small-pox. Expectant mothers are visited at home, but rarely come to the clinic, so that the new midwifery does not make much progress. The housing shortage continues. The local estimate made in 1919 of the need for 529 new houses was, Dr. Goldie thinks, an underestimate: 166 houses have been built under the municipal scheme. The comparatively high but "utterly uneconomic" rentals of the new houses lead to sub-letting and overcrowding. Insanitary houses have to remain occupied.

Shrewsbury.

Dr. H. Gordon Smith thinks the most satisfactory work of his department has been in connexion with maternity and child welfare. Although climatic conditions favoured a low infantile mortality rate in 1922, "with hopes of better housing even more striking results may ensue." The references to housing do not hold out much hope, however. The municipal schemes have not touched the poorly paid worker, and Dr. Smith says "many of the inhabitants never sleep in a bed, or if they do they share it with several adults or children." He further suggests that some of the large firms might provide a few houses for their own employees and help "to remove a blot of which no Salopian can feel proud."

Watford.

Dr. William J. Cox reports that the housing question is the most urgent matter affecting the public health. The health visitors meet with many cases of overcrowding, although 1000 houses have been provided. Dr. Cox thinks 2000 more are required if slums are to be demolished. Of six unhealthy areas scheduled, it is hoped that one will be dealt with before long. There are still 1800 unsatisfied applicants for houses, excluding non-residents. The maternity and child welfare scheme will be fairly complete when the proposed dental clinic has been provided. Dr. Cox is impressed with the absence of malnutrition among the Watford school-children, and also with their cleanliness. Owing to tactful following-up by the school nurses, a very high percentage of treatment of defects is secured.

Yeovil.

Dr. Charles W. Gee says there are many cases of overcrowding, and that, owing to house shortage, no steps can be taken. The staple industry of Yeovil is the manufacture of leather gloves, which affords both factory and home employment. One of the gloving firms has installed hot baths, of which 95 per cent. of the employees take advantage. The insufficiency of the water-supply is to be met by sinking a well into the greensand at Cattistock, in Dorset. Dr. Gee says an open-air school is badly needed in Yeovil to deal with cases of pre-tuberculous, anæmic, and debilitated children, and that in the meantime playground classes should be utilised. At least two half-days per week are needed for dental work in the schools, instead of one as at present.

SCHOOL MEDICAL SERVICE.

Birmingham.

Birmingham is invariably ahead in social effort. There are two nursery schools in the city, one in Tiverton-road with accommodation for 35 children, and another in Summer-lane with an average attendance of 40 out of a school roll of 49. The school medical officer, Dr. G. A. Auden, himself visits the school weekly, seeing any new admissions or cases requiring medical examination. A routine examination is made twice yearly of all the children. Dental examination and treatment are provided. The school has been singularly free from infectious disease, and the parents in the district are so anxious to obtain admittance for their children that selections have to be made on a necessity basis. It is to be hoped that special efforts will be made in Birmingham to increase the nursery school accommodation, if only to demonstrate the exceptional value of these schools. A new development has marked the past year. A consulting aural surgeon has been appointed to deal with the serious problem of discharging ears and deafness, and an aural clinic for this purpose has been opened in Great Charles-street for referred cases—that is, cases which have proved refractory in progress under treatment by the assistant medical officers, or which may require operative treatment or special education in a deaf school. Fifty children were examined in this connexion during the six months the arrangement has been in operation, and a large number were found to require operative treatment for enlarged tonsils and adenoids. Cases where the ear discharge, although secondary to naso-pharyngeal infection, has been due not to the presence of adenoids but to that of polypi in the maxillary antrum have been found to be more common in children than was expected. Verminous conditions have improved, the numbers infected being 1000 less than last year. Ringworm was found in 411 cases, which were all X rayed. The school dentists inspected 52,190 children, and referred 71 per cent. for treatment. In order to determine what results can be obtained by intensive methods a school was selected and the whole school was instructed

in dental hygiene by special lectures and lessons. The dentist and dental nurse then visited the school, and visits were paid to the homes of those refusing treatment. The scheme is still in progress; 457 children have been examined, and 426 found requiring treatment. Of these, 240 were treated, and 186 refused treatment; 19 of the latter eventually received treatment.

In addition to the Uffculme Day Open-air School, where from May to September arrangements are made for 16 boys to sleep at the school, Birmingham now has at Cropwood a residential open-air school for 52 children, presented fully-equipped to the city by Mr. and Mrs. Barrow Cadbury, who have generously offered £1000 per annum towards the expenses. Every two years boys and girls will replace one another. It is hoped that each child will remain at the open-air school for six months, when he will then be transferred, if possible, for a short period to Cropwood to harden off. Dr. Auden is anxious to have further provision for children with rheumatism and carditis, and in this direction he considers the most profitable expansion of special school work can be made. Altogether 73,832 children were examined, 42,398 of these requiring actual treatment or further observation. Of the 45,105 children examined at routine inspection, 14,371 required treatment, and during the year 18,507 children received it. There were 838 cases of malnutrition found at routine inspection, 1746 cases of skin disease, 228 of defective speech, 866 with deformities, 21 cases of definite pulmonary and 116 of non-pulmonary tuberculosis. No children were recorded as having enlarged non-tuberculous cervical glands.

Obituary.

PATRICK WHYTE RATTRAY, M.B., C.M. ABERD., F.R.C.S. ENG.

Dr. P. W. Rattray, of Pemberton-gardens, Upper Holloway, London, who died of angina pectoris on July 2nd, in his sixty-fourth year, received his medical education at the University of Aberdeen, where he graduated in arts (first-class honours and gold medal) in 1881, and in medicine (highest honours) in 1885, and at the London and Middlesex Hospitals. He was for a time senior demonstrator of anatomy at Aberdeen, and enjoyed a high reputation as a teacher. Being unsuccessful in one or two attempts to secure teaching and hospital appointments he turned to private practice, which he cultivated with great success. He became F.R.C.S. Eng. in 1888.

Dr. Alexander Blackhall-Morison writes: "Some years ago I invited a well-known Aberdonian to dinner, and remarked that I had also asked one of the most distinguished graduates Aberdeen ever sent out to meet him, who was living contentedly in general practice. He at once inquired, 'Do you mean Pat Rattray?' When invited to confer with Rattray I always regarded it as a compliment, for cases in which he sought counsel were invariably difficult. Rattray shunned publicity; he wrote nothing, which is to be regretted, for the studies of one with his calm judgment and comprehensive outlook would have been valuable. He leaves a widow, a son, who did good work in the Naval Flying Corps during the war, a daughter, and warm friends to mourn their loss."

Another medical friend writes: "Rattray was the soul of honour; in practice he was the embodiment of sagacity and precise knowledge, and these qualities were extended to his conversation and culture generally. Ideally happy in his home life, he met death as he had lived, with no complaint and no impatience, and with a whispered apology for bringing a colleague from his bed."

DONATIONS AND BEQUESTS.—The late Mr. James Smith, of Blundellsands, Lancashire, left by will among other bequests £5000, and £15,000 on the death of his wife, to the University of Liverpool for Scholarships.

Correspondence.

"Audi alteram partem."

THE PANEL PRACTITIONER'S RIGHT OF APPEAL.

To the Editor of THE LANCET.

SIR,—The pretentious claim of the Insurance Acts Committee of the British Medical Association to be regarded as the custodian of the interests of the panel practitioner during the present negotiations respecting the new agreement for service cannot be allowed to go unchallenged. At page 8 of a memorandum issued by the Insurance Acts Committee, it is stated that the production of the Draft Regulations, 1920, was the result of the continuous consultation of the Insurance Acts Committee by the Insurance Commissioners and the Ministry during the previous 18 months. At page 4 of this memorandum, under the heading "New Agreement for Service," is set forth a resolution passed by the Conference of Local Medical and Panel Committees as follows:—

"That in the opinion of this Conference no medical practitioner should be deprived of the right to continue in insurance practice without a final right of appeal to an independent judicial administrative body or court other than His Majesty's Insurance Commissioners or Ministry of Health."

Herein follows the comment of the Insurance Acts Committee: "Specific provision made (it was only implicit before) that in a case of hearing by the Ministry of representations against a practitioner the Ministry may and if directed by the Court shall state in the form of a special case any question of law arising (Reg. 32 (3)). Otherwise no change made."

A more grossly misleading statement it would be difficult to conceive. Article 32 (3) of the Medical Benefit Regulations, 1920, makes no provision—specific or otherwise—for a final right of appeal to the High Court in a case of a hearing by the Ministry of representations against a practitioner. By disingenuously detaching a portion of Article 32 (3) from its context the Insurance Acts Committee obtained the requisite colour for the misrepresentation which it desired to foist upon the unwary practitioner. Whilst the significant omission of Sections 7 and 19 of the Arbitration Act, 1889, from Part III. of the Fifth Schedule to the Regulations, which sets out the provisions of the Arbitration Act, 1889, which shall apply to an inquiry under Part VI. of the Regulations, is passed over in silence by the Committee.

I am, Sir, yours faithfully,

J. H. CLEMENTS.

Winkleigh, N. Devon, July 6th, 1923.

THE PROPHYLACTIC TREATMENT OF PUERPERAL SEPSIS.

To the Editor of THE LANCET.

SIR,—I should like to support all that Lady Barrett advises in her efforts to apply modern surgical technique to the practice of midwifery. The risks of infection at parturition are as great as of infection during operations. No surgeon would argue that because circumstances compelled him to operate under extremely bad conditions, he should therefore omit the ordinary routine by which the operation area is rendered aseptic as far as it is possible to do so. Insanitary surroundings call for greater not for less precautions.

At the British Hospital for Mothers and Babies, Woolwich, to which I am attached, a routine approaching in carefulness that laid down by Lady Barrett is taught to the midwives. As regards in-patients, shaving of the vulva is always done, followed by swabbing with lysol solution and again with perchloride. A perchloride swab is left between the labia, care is taken to shave round the rectum with the patient on her side after the front has been done. The vulva

and perineum in all operative cases are painted with iodine before interference. On the district, shaving is not always done on account of the prejudice against it, but it is considered advisable and the keen midwives adopt the practice. At present we provide for each district case, two sterilised pads, and for stitch cases, gauze dressings. If an instrumental case is near enough to the hospital, we send out towels, overalls, pads, and the like. All our midwives are taught to make vaginal examinations in gloves and to deliver in gloves.

With regard to antenatal work, I strongly support Lady Barrett. I have had dental treatment carried out in numerous cases, both at Woolwich and at the Welfare Centre of the Women's League of Service at Hammersmith. Gas is always given for extractions, and I have never known any ill-result. We use every effort to train the midwife pupils to rely on abdominal examination and to avoid vaginal examinations in all cases where the size and position of the head suggest the possibility of a difficult delivery.

The importance of an anæsthetic in the second stage cannot be too strongly urged in order to get full control as the child is born, and to avoid tears and their sequelæ.—I am, Sir, yours faithfully,

MARY A. BLAIR, M.D., B.S. Lond.

Belgrave-road, S.W., July 6th, 1923.

PROTEIN IDIOSYNCRASY AND ASTHMA.

To the Editor of THE LANCET.

SIR,—We have recently had under our care two cases of asthma which we think are of special interest. The first is a sufferer with ten years' history of frequent incapacitation, and the second a man who had his first attack on occupying the room vacated by the first. The suggestion of a connexion between these two events was increased by the discovery that the second man, L., had a positive cutaneous reaction to the protein, for which the first man, K., had received the antigen as a therapeutic measure. As briefly as possible we wish to record the salient features of both cases and the steps in our investigation into their possible relationship.

K. is a man of 29, who for nine years had attacks of asthma at intervals of about a month, with the exception of a period in the summer of 1920, when he enjoyed five months practically without symptoms. The attacks occurred during the night and from four to six nights in succession. They were frequently associated with taking cold; they had appeared to follow the taking of certain fruits, and a psychical element in causation had been noted on an occasion when asthma immediately followed a gasp of admiration on seeing a challenge cup won by comrades. Relief invariably followed the administration of adrenalin, and two minutes after the injection of V $\frac{1}{1000}$ adrenalin solution, the vital capacity had been found to have increased from 300 c.cm. to 1750 c.cm. The bronchial catarrh associated with asthma was always a marked feature, and it usually persisted for several days after amelioration of the bronchial spasm. Severe attacks were associated with a febrile reaction and occasionally herpes of the lips.

In December, 1922, K.'s statement that he thought attacks were induced by taking apples led to an investigation of his protein susceptibility by means of cutaneous reaction. There was no reaction to group proteins for fruits, but there was a positive reaction to organism A. Respiratory tract (streptococcus, staphylococcus, pneumococcus and influenza bacillus). As symptoms and physical signs of simple respiratory infection had accompanied the asthma, K. was then given a series of doses of antigen prepared from this protein, commencing with a dose of five units on Jan. 31st, 1923, and ending with a dose of 1000 units on March 7th. There was a mild attack of asthma during this course, but since its completion there has been no return of bronchial spasm. K. had hitherto shared a room with a friend, A., but while the inoculations were in progress he was accommodated in a ward. On May 7th he returned to his room rejoicing in his newly acquired resistance, only to "catch a cold" and return to hospital on the 18th with a temperature of 101–4° F., respirations 36, and pulse 128. Bronchial spasm was this time not absent, but barely recognisable, while the bronchial catarrh element was severe. Moist sounds appeared in the lower lobes of both lungs, there was copious frothy sputum, and the attack ended as had done former attacks of asthma, normal health being regained on May 25th.

In the meantime, K.'s friend A. changed his quarters, and on May 30th K.'s old room was occupied by two men, L. and G. On June 5th L. had the first attack of asthma of his life. It was mild, but attacks on the succeeding nights were worse, and on the morning of May 9th he was unable to go to work and sought medical aid. He was admitted to hospital with a typical and severe attack of asthma, which quickly improved, and from which he had completely recovered on the 13th. After a week's interval, during which time he had normal health, cutaneous reactions were carried out and L. was found to have a slightly positive reaction to organism A.

Our next step was to investigate the skin reactions of the room-mates of these two men—i.e., A. and G.—and in both cases negative results were obtained. During June 18th, 19th, and 20th, K. and L. were accommodated together in a small side ward. On the evening of the 20th both men were discharged from hospital, and L. returned to the now suspected room, K. entering an adjoining room. On the night of June 22nd–23rd L. had an attack of asthma. This was repeated on the 24th, and on the 25th he was again removed from the room. After June 25th K. and L. have been in close association without apparent ill-effect in either case.

We regret that an urgent demand for side-ward accommodation induced us to terminate the isolation of K. and L. after three days together. L.'s first attack occurred six days after entering K.'s room, and his second six days after meeting K. and three days after re-entering K.'s room. We are, however, inclined to the opinion that his attacks occur rather in the suspected room than in the presence of K. Both patients have had symptoms and signs which, in the past, have led to a diagnosis of pulmonary tuberculosis, but in neither case has the tubercle bacillus been found in the sputum. K. has had attacks in many places, but has always associated certain localities with severe attacks. As described above, a psychical element has been recognised in his case, but it must be noted in this connexion that, as a soldier, he was never prevented from entering or leaving the line by asthma.

The following questions now present themselves: Is K. a carrier of micro-organisms producing a protein to which both he and L. are susceptible? As the room is specially constructed and maintained for the reception of ex-sanatorium patients, it would seem hardly likely that infection could take place after a lapse of 12 days, during which time the room was unoccupied. Are both K. and L. in constant presence of similar organisms but only liable to bronchial spasm under certain undiscovered conditions existing in this room? These are questions which we hope to investigate, but we consider that the unusual and definite nature of the phenomena with which we have come in contact merit their early publication.

We wish to record our indebtedness to Dr. P. C. Varrier-Jones for permission to publish the foregoing notes. We are, Sir, yours faithfully,

L. B. STOTT,
B. R. A. MORTON.

Papworth, Cambridgeshire, July 5th, 1923.

THE LYMPHOCYTOSIS OF INFECTION.

To the Editor of THE LANCET.

SIR,—I suggest that Dr. H. L. Tidy and Dr. E. C. Daniel have, in your current issue, committed themselves to statements which are of a somewhat too comprehensive nature. They record their opinion that "glandular fever and the condition described as infective mononucleosis are identical," and further, that the conception of infective lymphocytosis is based on articles which "reveal no evidence for the statement . . . . . that sepsis is a rare but occasional cause of absolute lymphocytosis." I readily admit that some of the cases brought forward in support of this view were cases of glandular fever, which Dr. Tidy has done so much to establish in its true position as a clinical entity, and that others were cases of leukæmia—e.g., the case of Sanders. But a residuum of cases fails to fit in under either heading, and some of these cases are contained in those articles which are so unceremoniously dismissed.

Cabot has the credit of first calling attention to a condition which he described under the heading, "The Lymphocytosis of Infection." His first case was that of a septic infection of the finger followed by lymphangitis and enlargement of axillary glands. The blood changes are not given in detail, but a statement from Cabot that there was "throughout a well-marked, absolute and relative lymphocytosis" has more value than mere figures. Fever continued for "several weeks," but the patient recovered and was in good health 15 years later. This is not the picture of leukæmia, nor is it that of glandular fever. Yet Dr. Tidy says that "glandular fever and the condition described as infective mononucleosis are identical." There is a further aspect of the question which may be considered—namely, that there exists an infective myelocytosis—e.g., that recorded by Simon[1]—which would appear to bear much the same relation to myelæmia as infective lymphocytosis does to lymphæmia. There are good reasons for supposing that a hyperplasia of the hæmopoietic tissues, comparable to that of leukæmia in all but degree, may complicate various septic conditions, and is further of such frequent occurrence as to be typical in mumps (in early years of life) and in glandular fever.

But it may be doubted whether the recorded cases warrant any more sweeping assertion than this.

I am, Sir, yours faithfully,

Sevenoaks, Kent, July 6th, 1923. GORDON WARD.

TUBERCLE ANTIGENS.

To the Editor of THE LANCET.

SIR,—In your issue of June 30th you draw attention editorially to recent work of Dr. A. R. Jentzer and his fellow-workers regarding the attack on the acid-fast coat of the tubercle bacillus *in vivo*. These workers inject or use a proprietary preparation or compound of fats, lipoids, and waxes. Prof. G. Dreyer, as is well known, removes the fatty and waxy capsule of the tubercle bacillus *in vitro* by formalin-acetone. In both the methods centre on the waxy and fatty protective coat. According to Dreyer, the removal of the acid-fast substances releases the protein antigen. This is thus more readily soluble in trypsin, and after injection is more effective in the production of various antibodies. On the other hand, according to Jentzer and his colleagues, it is claimed that their compound of fatty and waxy substances "stimulate the tissues to produce ferments which not only saponify the fatty and waxy substances introduced by parenteral injection, but also the fatty, lipoid, and waxy constituents of the tubercle bacillus." This method of attacking tuberculosis is described as novel, and in a sense to some extent as anticipating the work of Prof. Dreyer, but the exact composition and mode of manufacture of the compound of the fats, lipoids, and waxy substances used by Jentzer and his colleagues are not published. May I point out that the employment of the fats and lipoids and the theory therefrom constructed is not novel? For many years various aspects of the fat-splitting action of the pancreas has occupied my attention. The results of my work, carried out in the physiological and bacteriological laboratories, King's College, have been published in THE LANCET and elsewhere.[2] The main outcome of this work has been to show that a natural and increased production of lipase in the blood and tissues is an important factor in the protective mechanism of the body. This is particularly the case in malignant disease, although I have pointed out that this lipolytic defensive response is not specific to cancer but is common to tuberculosis and other bacterial invasions. This I have expressed in identically the same terms as employed by Jentzer and his colleagues. Lipase, moreover, lends itself naturally to attacking the fatty and lipoid coat of the tubercle bacillus *in vitro*. As long known, lecithin is split by lipase and accelerates also the activity of that enzyme *in vitro* and *in vivo*. In my experiments it was found that fatty acids are liberated by lipase from killed tubercle bacilli *in vitro*. In this way saponified extracts were prepared and indicated for therapeutic use. Preparations were made also by extracting tuberculous material with the usual fat and lipoid solvents, alcohol, ether, and chloroform successively, in a Soxhlet's apparatus in the usual way, and saponifying the extracted material or emulsifying. This method in the main differs essentially from that of Jentzer and his colleagues in that the *products* of the fats and lipoids of tubercle bacilli are used, together with protein and phosphate derivatives or constituents of the bacillus. The soaps themselves—e.g., sodium oleate, organic and inorganic phosphates, and proteins—have marked power in stimulating tissue lipolytic activity. Similar methods have been employed in dealing with the fats and lipoids of the cancer cell and tissues. The idea or principle underlying treatment by these extracts is stimulation of tissue lipolytic activity with destructive action on the fats and lipoids of the cancer cell, as in the case of tuberculosis, on the fats and lipoids of the tubercle bacillus.

I am, Sir, yours faithfully,

J. A. SHAW-MACKENZIE, M.D. Lond.

London, June 30th, 1923.

[1] Amer. Jour. Med. Sci., 1907, cxxxiii., 389.

[2] Shaw-Mackenzie, J. A.: THE LANCET, 1919, ii., 825; Brit. Med. Jour., 1921, i., 402; Jour. Trop. Med. and Hyg., 1921, xxiv., 161; Med. Press and Circ., 1922, i., 287.

DELAY IN GIVING DIPHTHERIA ANTITOXIN.

To the Editor of THE LANCET.

SIR,—All medical officers of health will agree with Dr. F. F. Caiger that frequently in fatal cases valuable time is lost by the practitioner. In 17 fatal cases of diphtheria occurring in Brighton during 1921 and 1922 the time lost by the doctor failing to diagnose the condition is shown in the following table:—

Doctor saw child on ..	2nd	3rd	4th	5th	6th	7th	day of illness.
Patient had antitoxin on	3rd	3rd	4th	5th	7th	9th	
	4th	3rd	4th	6th	—	—	
	5th	3rd	—	—	—	—	
	7th	4th	—	—	—	—	
	15th	5th	—	—	—	—	
	—	5th	—	—	—	—	

There is little doubt from a study of the table that the case mortality of diphtheria can be greatly reduced by prompt diagnosis and immediate removal of the patient to hospital. In Brighton probably one-third of the deaths could have been avoided; assuming the same conditions for the whole of England and Wales the annual loss due to lack of prompt diagnosis by the doctor is some 1800 lives. When one considers that diphtheria in the child is easy to diagnose, also that negative swab results give little help, the folly of awaiting swab results is apparent.

My own conclusions are: (1) It is the duty of general practitioners to acquaint themselves with the easily-grasped clinical signs of diphtheria and the duty of those controlling fever hospitals to give opportunity to the general practitioner to see typical cases of the disease; (2) it is doubtful if local authorities should accept swabs for the diagnosis of acute throat conditions in children.

I am, Sir, yours faithfully,

DUNCAN FORBES,

July 3rd, 1923. Medical Officer of Health, Brighton.

R.A.M.C. MEMORIAL IN DUBLIN.—On July 4th Sir John Goodwin, Director-General of the Army Medical Service, unveiled in St. Patrick's Cathedral, Dublin, a memorial to the officers and men of the Royal Army Medical Corps who fell in the late war. The memorial is a marble tablet, a replica of that erected some months ago in Westminster Abbey. There was a large attendance at the unveiling ceremony.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful :—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part I., Physics and Electrotechnics.—Hubert O. Gunewardene, Richard Hayes, and Harold K. G. Hodgson.

Part II., Radiology and Electrology.—Narayan Mahadev Bodas, Lionel R. G. de Glanville, Malcolm Frizell, Hubert O. Gunewardene, William H. Hastings, Richard Hayes, Mahadev Dattatraya Joshi, Anna T. Kellock, Gabriel J. Luyt, Margaret J. Moir, Jessie E. Sheret, Sorab Byramji Warden, and Edward V. Whitby.

UNIVERSITY OF LIVERPOOL.—At examinations held recently the following candidates were successful :—

DEGREE OF M.D.

A. V. Campbell and S. M. A. Faruki.

DEGREES OF M.B. AND CH.B. (HONOURS).

Class I.—D. Macfarlane (distinction in Obstetrics and Surgery).

Class II.—F. Earlam and T. J. Kirkpatrick (distinction in Obstetrics), J. Roberts (distinction in Medicine), and A. Tumarkin (distinction in Surgery).

FINAL EXAMINATION FOR DEGREES OF M.B. AND CH.B.

Part III.—B. Abelman, A. R. D. Adams, J. Berkson, R. W. Brookfield, T. L. Bulmer, Hilda Cantrell, W. J. B. Chidlow, R. G. Cooke, V. C. Cornwall, I. H. Davies, Hilda M. Davis, J. O. Edwards, D. P. Finn, N. D. Fraser, J. R. Griffiths, S. Hesselberg, Elizabeth Hunt, T. Knowles, W. J. Laird, D. A. Levin, C. B. Lewis, Eileen M. Lloyd, Mary M. McMillan, P. Malpas, J. H. Moorhouse, Beatrice M. Niven, T. V. O'Brien, C. H. Owen, J. D. O'M. Poole, Gertrude E. Pugmire, E. L. Roberts, Dorothea W. Rogers, J. F. D. Shrewsbury, E. R. Smith, Helen Standring, Dorothy A. Taylor, H. A. Thomas, E. J. Whymark, H. P. Widdup, A. G. Wilkinson, E. B. Wilkinson, J. Williams, and Mary G. T. Williams.

Part II.—B. E. Acland (distinction in Public Health), M. M. F. Arthur, C. B. Bamford, P. D. Barling, E. C. Benn, R. V. Berrington, C. H. Bradley (distinction in Public Health), R. S. Brock, Helen S. H. Brown, Alison M. Brummitt, J. W. Cowen, N. Cresswell, M. M. Datnow, Edwina M. Davies, Eileen N. Deane, W. T. Donovan, W. H. Ellam, W. Emdin, E. A. R. Evans, F. R. Faux, H. W. Fell (distinction in Forensic Medicine and Toxicology and Public Health), H. R. Fisher, M. Fisher, C. G. Foxcroft, F. F. Fuller, G. A. Fulton, G. A. Garrett, J. Gaughan, H. Gobie, M. Godwin, J. Graham, T. A. Griffiths, Dorothy M. Hanson, T. Hare, A. D. Harper, F. C. S. Hinsbeeck, Fannie S. Holt, S. Howard, J. E. Howie, G. P. Huws, Bertha H. Irvine, F. P. Irvine, Elvy I. Johnstone, C. P. Jones, R. W. Jones (distinction in Forensic Medicine and Toxicology and Public Health), R. C. Jones, R. Jones (distinction in Forensic Medicine and Toxicology), D. Katz, G. F. Kinder, J. Leggate, W. E. Lishman, J. H. M. Little, G. Lowe, W. A. McCurdy, G. Macdonald (distinction in Forensic Medicine and Toxicology), Margaret S. Macdonald, E. Miles, D. H. Mills, E. P. Moloney, G. A. Moulden, A. Newton (distinction in Forensic Medicine and Toxicology), J. R. R. Nicholas, J. R. Oddy, J. J. O'Donovan, F. C. O'Mara, A. Oserovitz, E. R. S. Owen, R. D. Owens, A. Pool, R. J. Prydderch, Gwendolen H. ff. Roberts, J. T. C. Roberts, E. Rowlands, E. Scott, J. A. Scott, P. Strelitz, G. V. L. Taylor, A. C. Terry-Thompson, J. H. Thompson (distinction in Public Health), J. J. du Toit (distinction in Forensic Medicine and Toxicology), Marjorie A. Unsworth, H. S. Welton (distinction in Forensic Medicine and Toxicology), T. W. White, and Gwennie Williams (distinction in Forensic Medicine and Toxicology).

Part I.—Mary G. B. Allen, C. G. Foxcroft, T. Hare, A. D. Harper, R. W. Jones (distinction in Pathology), T. S. L. Jones, Rebecca Katz, W. A. McCurdy, J. McWilliams, J. R. Mitchell, F. C. O'Mara, R. D. Owens, P. J. Rogers, J. H. Thompson, and Mabel J. Watterson.

DIPLOMA IN PUBLIC HEALTH.

Doris Brown, Matilda L. Craig, Jeannie P. Dunn T. K. Hughes, W. McMullen, and T. R. Roberton.

UNIVERSITY OF DUBLIN, SCHOOL OF PHYSIC, TRINITY COLLEGE.—At examinations held recently the following candidates were successful :—

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.—Thomas W. May (high marks), Paul H. N. Labuschagne (high marks), William C. Somerville-Large (high marks), Isidore Rosin, James Dick, William Gallaugher, James V. Morris, William B. Roantree, Eric T. S. Rudd, Oliver Chance, William P. E. McIntyre, Thomas G. B. Crawford, William A. Hopkins, Joseph R. Gregory, and O'Donel T. D. Browne.

Part II., Medicine.—Marjorie F. Sibthorpe (high marks), Victor O. McCormick (high marks), Paul J. Grobler, Morris Cohen, Benjamin W. D. Fayle, Francis J. O'Meara, Charles T. MacCarthy, William T. Hogan, William E. Hutchinson, Mossy Jaffe, James E. Deale, Frederick T. Easby, Richard A. D. Pope, William L. Duncan, Isobel G. Smith, Henry M. Martin, Harry Ruben, Harold Lewin, Reginald A. Dench, Richard C. L. Griffiths, Martha Reid, Albert V. Foster, Cecil H. Keller, Solomon Narunsky, Bertha H. Lawler, James J. O'Grady, Frederick G. Brown, Henry W. L. Dale, and Isabella H. Speedy.

Surgery.—Robert T. Jackson (high marks), Benjamin W. D. Fayle, Francis J. O'Meara, Joseph E. Eliason, Joseph A. Gaynor, John M. Mounsey, Marjorie F. Sibthorpe, Richard A. D. Pope, Hyman S. Roseman, Maria E. Wagener, Reginald A. Dench, William S. Dixon, Philipp F. H. Wagner, Bernard Morris, William E. Hutchinson, Wilfrid E. C. Wynne, Arthur Darlington, Asher Asherson, William F. Whaley, Gladys Weatherill, Frederick T. Easby, Dermod H. F. Milmo, Dorothy C. H. Dorman, Lazarus Heyman, Alice M. A. Downing, Robert S. McElroy, Richard C. L. Griffiths, Henry L. Hanna, Rupert L. Hill, James R. Wills, Siegfried D. Gabbe, Joseph C. Byrne, Eric C. Downer, Willem J. Janse van Rensburg, Charles T. MacCarthy, Solomon Narunsky, Pieter C. du Plessis, Charles Gordon, Albert V. Foster, Tobias Freedman, Dorothy I. Henry, Herbert Kohlberg, Israel Marin, Laurence Phillips, Charles R. Hillis, Julius Kruger, Jack A. Levitt, and Joseph M. O'Connor.

Midwifery.—John J. Laing (high marks), Maynard A. Gerrard (high marks), Henry Isaacson (high marks), James E. Deale, William F. Whaley, Rudolf Schaffer, Robert F. J. Henry, William L. W. Smith, Noel G. McAuliffe, Thomas G. Wilson, Gordon Purdy, Gerrard A. Sloan, Wallace R. Aykroyd, Evaline E. Mooney, Lucy M. Joly, James J. O'Grady, Isaac J. Isaacson, Mossy Jaffe, Charles Gordon, Kathleen D. Murison, Norman M. Greeves, Philip P. van der Merwe, Jan Andreas du Toit, Isabella H. Speedy, Jack M. Gordon, James J. FitzGerald, Willem J. Janse van Rensburg, and Robert L. C. Fisher.

DIPLOMA IN PUBLIC HEALTH.

Part I., Chemistry, Bacteriology, Physics, and Meteorology.—Edmund C. Smith and Elizabeth Killian.

Part II., Sanitary Engineering, Practical Sanitary Report, Hygiene and Epidemiology, Vital Statistics, and Public Health Law.—Edmund C. Smith, Dorothy K. M. Henry, Elizabeth Killian, and Catherine A. Goggin.

UNIVERSITY OF MANCHESTER.—The following appointments have been made :—Lecturer in Botany : Mr. John Walton. Lecturer in Bacteriology : Dr. G. Selby Wilson. Assistant Lecturers in Chemistry : Mr. E. L. Hirst and Mr. G. N. Burkhardt.

THE LATE DR. G. L. H. REVILL.—George Leslie Howard Revill, who died on July 6th, received his medical education at Charing Cross Hospital and at Vienna, becoming M.R.C.S. in 1890. He was well-known in Lincolnshire, having a wide practice centred at Heighington, and being very popular alike with his patients and with the members of the many public bodies and friendly societies with whom he held appointments. He was a devout churchman and in politics an ardent Conservative, but he formed enduring friendships with many whose views differed widely from his own. His widow and a son survive him.

ROYAL SOCIETY OF MEDICINE: SECTION OF COMPARATIVE MEDICINE.—On July 6th, under most promising auspices, a new section of this society was formally constituted under the title of the Section of Comparative Medicine, the membership of which is open to duly qualified veterinary surgeons as well as to practitioners of human medicine. Considerable advance has already followed the coöperation of workers on the two sides of medicine, and it is hoped that the constant interchange of views at the meetings of this section will lead to even more rapid progress. The new section, the foundation of which is largely due to the good offices of Prof. F. T. G. Hobday, starts with a strong council, half representing human medicine and half veterinary medicine, with Sir Clifford Allbutt, who has for many years advocated the rapprochement which has now been accomplished, as president. Vice-presidents include Sir Layton Blenkinsop, Lieut.-Colonel J. W. Brittlebank, Sir William Hale-White, Prof. F. T. G. Hobday, Sir William Leishman, F.R.S., Sir John Moore, Sir Leonard Rogers, F.R.S., and Mr. G. H. Wooldridge. Meetings for papers and discussions will be held next session on the fourth Wednesday of each month at 5.30 P.M.

POSTPONEMENT OF THE INTERNATIONAL CONGRESS OF OPHTHALMOLOGY (1925).—The Committee of British Ophthalmologists, appointed to organise an international congress in 1925, finds with regret that it is unable to do so in accordance with the conditions under which the British invitation was accepted by the Washington Ophthalmological Congress in 1922. It will be remembered that at Washington it was decided that the next congress should be strictly international and that German should be one of the official languages. The Committee has since been informed that the Société Française d'Ophtalmologie, the Société d'Ophtalmologie de Paris, and the Société Belge d'Ophtalmologie have passed resolutions to the effect that they feel themselves unable to participate in a congress if Germans are invited. The Committee is of opinion that to proceed with the congress in these circumstances would tend to perpetuate a schism in the ranks of ophthalmology and militate permanently against the progress of the science which all desire to promote. The Committee has therefore reluctantly decided to postpone the congress.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.—The annual general meeting of the society will be held at 11, Chandos-street, Cavendish-square, London, W. 1, on July 20th, at 5.30 P.M., when a paper will be read by Mr. Frank Kidd on Vasostomy for Chronic Seminal Vesiculitis (A New Technique).

FELLOWSHIP OF MEDICINE.—A complete course of lectures on medical and surgical diseases of children will be given by all the members of the staff at the Royal Waterloo Hospital from July 16th to August 3rd. In addition to the lecture-demonstrations candidates will have the privilege of attending the out-patient department, wards, and operations. A special course in dermatology will be given by members of the staff at the Hospital for Diseases of the Skin, Blackfriars, from July 16th to the 28th inclusive. Instruction will be given in the out-patient department every afternoon from 2.30 P.M., and a special demonstration on interesting selected cases will be held at 4 P.M. on July 16th and July 25th. The course will also include a venereal clinic on Tuesday and Friday each week from 5.30 to 7 P.M. The fees for these courses are 3 guineas and 2 guineas respectively. Application for copies of the syllabus and tickets of admission should be made to the Secretary to the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

SIXTH CONGRESS OF THE SOCIÉTÉ INTERNATIONALE DE CHIRURGIE.—The Congress will be held in London from July 17th to 20th; the scientific sessions will be held at the Royal Society of Medicine, 1, Wimpole-street, W. 1, and the definitive programme is as follows:—July 16th: 2 P.M., meeting of International Committee. 17th: 11 A.M., opening by the Prince of Wales, speeches by Lord Curzon, Mr. Neville Chamberlain, and others, and address by Sir William Macewen (president); 2 P.M., discussion: Surgery of Endocrine Glands (Thyroid excluded). 18th: 9.30 A.M., discussion: Arthroplasty; 2 P.M., operations at hospitals. 19th: 9.30 A.M., discussion: Late Results of Peripheral Nerve Injuries; 11.30 A.M., general meeting; 2 P.M., operations. 20th: 9.30 A.M., discussions: Vaccine and Serotherapy (Tetanus excluded), and Operative Shock; 2 P.M., operations; demonstrations on vaccine-therapy by Sir Almroth Wright at St. Mary's Hospital. Entertainments:—July 16th: Evening reception by the University of London; 17th: evening reception by the President; 18th: official luncheon by H.M. Government for National Delegates; evening reception by the Lord Mayor, Mansion House. 19th: 4–6 P.M., reception by the President of Royal College of Physicians; 9–12 P.M., reception by President of Royal College of Surgeons; 20th: Annual banquet of Society. Secretaries of the Congress, Sir D'Arcy Power and Mr. J. S. H. Roberts (delegate for British Isles).

Mr. Henry Kimpton announces the publication of the following: "The Tonsils: Faucial, Lingual, and Pharyngeal, with some account of the Posterior and Lateral Pharyngeal Nodules," by Dr. Harry A. Barnes (second edition); "Practical Local Anæsthesia and its Surgical Technic," by Dr. Robert Emmett Farr; "Cerebro-spinal Fluid in Health and in Disease," by Dr. Abraham Levinson, B.S. (second edition)' "Tonsillectomy by Means of the Alveolar Eminence of the Mandible and a Guillotine," by Dr. Greenfield Sluder; "Local Anæsthesia in Dental Surgery," by Mr. F. St. J. Steadman, L.D.S. Eng.; "Epidemiology and Public Health: A Text and Reference Book for Physicians, Medical Students, and Health Workers," by Dr. Victor C. Vaughan (vol. ii. ready, vol. iii. in preparation); "Clinics and Collected Papers of St. Elizabeth's Hospital, Richmond, Virginia, 1922"; and "Collected Papers from the Washington University School of Medicine, 1921."

CONDITION OF PRISONS AND INTERNMENT CAMPS IN THE IRISH FREE STATE.—The Free State Government has issued a copy of the report of the International Red Cross Commission on the treatment of prisoners in the hands of the Government. It is stated that the Free State Government welcomed an investigation by an independent and competent body, in view of the propaganda that had been conducted, alleging improper treatment of prisoners. Mr. R. Haccius, a delegate from the Red Cross Commission, visited the principal internment camps in the Free State. He stated that he found the treatment of the prisoners devoid of hostile spirit, and although the Government refused to grant the prisoners the status of "prisoners of war," in reality it treated them as such. Nowhere did he find a wounded or sick prisoner left without medical treatment. On the contrary, he found everywhere a carefully organised medical service. The serious accusations made on this subject appeared to the delegate to be unfounded. He noted that the buildings of the old North Dublin Union were in course of alteration for the reception of the women detained at Kilmainham, and these buildings with the surrounding gardens would fulfil all desirable hygienic conditions. The delegate had instructions to exclude inquiry into individual complaints. He noted that searches had taken place in various private hospitals, but the working of these hospitals had not been interfered with. The complaints regarding sanitary conditions and food in the camps were unfounded. Mr. Haccius then gives a detailed report on the various camps and prisons visited. While satisfied generally with the sanitary conditions, he noted congestion in Mountjoy Prison, where there were in some cases three prisoners in cells which should not hold more than two. He speaks favourably of the medical arrangements everywhere, and noted at the Curragh Camp that "the patients seemed to be very grateful to the doctors for their devoted care and attention."

ROYAL VICTORIA HOSPITAL, BELFAST.—At a meeting of the board of management on July 4th the retirement of Prof. Thomas Sinclair after 38 years' service was the subject of several speeches expressive of the high esteem in which he is held, and of the appreciation by the board of his work as surgeon and teacher. An appropriate resolution was moved by Lieut.-Colonel Mitchell, seconded by the Rev. W. A. Watson, supported by Mr. W. Carson, J.P., and carried with much enthusiasm. The chairman of the board (Prof. J. A. Lindsay) described Prof. Sinclair as one of the pillars of the Royal Victoria Hospital and one of the mainstays of the Belfast Medical School, whose reputation at home and abroad he had done so much to promote and to enhance. Prof. Sinclair is succeeded on the staff by Mr. S. T. Irwin. Mr. H. P. Malcolm was elected assistant surgeon to the hospital.

AN ASYLUM IN INDIA.—The annual statements of the Central Provinces Lunatic Asylum naturally reveal a number of features which are strange to similar work in this country. The hospital accommodates about 400 insane, but the number had to be reduced considerably during the year owing to the scarcity of water. Mania and melancholia are the prevalent types of insanity; no cases of general paralysis, and only one of mental disease attributable to syphilis, were admitted during the year. On the other hand, cannabis indica plays an ætiological part which is unfamiliar to us; tuberculosis appears to be fairly common, and infection with ankylostomes was present in 16 per cent. of the admissions. A radical change in the diet scale has been introduced, and among other improvements which have been sanctioned by Government is the provision of proper accommodation for private patients.

UNIVERSITY COLLEGE, LONDON.—Viscount Chelmsford, chairman of the University College Committee, with Sir Gregory Foster, the Provost of University College, the Deans of the College Faculties, and the tutor to women students, held a reception last Saturday afternoon, July 7th, at which the whole of the College buildings were open for inspection. One object of the reception was to give all old students of University College an opportunity of re-visiting the College and of seeing some of the more recent extensions which have taken place, and in particular the new building for anatomy and the extension of the physiology and pharmacology buildings, forming the Rockefeller Benefaction, opened by the King on May 31st. University College Hospital and University College Hospital Medical School were open throughout the afternoon. About 3000 persons were present, including many headmasters and headmistresses of schools and others connected with various branches of education.

Sir Henry Gray, who is leaving Aberdeen to take up his new post as chief surgeon of the Royal Victoria Hospital, Montreal, was entertained by members of the medical profession to dinner at the Palace Hotel, Aberdeen, on June 27th, Mr. J. Scott Riddell in the chair. In proposing the health of the guest, Mr. Riddell spoke of other Aberdonians who had crossed the Atlantic to professorial chairs in Canada and the United States, and in the course of an eloquent tribute to Sir Henry Gray referred to him as one who would spread the light and enhance the reputation of the medical school of Aberdeen. Sir Henry Gray, in replying, recalled the commencement of his professional work under Sir Alexander Ogston, and his long association with many of those present. He spoke of his long consideration of the invitation to go to Montreal, and of the restlessness, increased by the war, which had helped him to come to his decision. In the light of the nature of his new work, of the environment in which it would be set, and the possibilities of the future in such a progressive place, he felt that it was one of the most desirable positions in the surgical world. Later on in the course of his reply Sir Henry Gray spoke of his great indebtedness to the nursing profession for the very high order of help he had received from them.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JULY 4TH.

Industrial Diseases.

Mr. D. G. SOMERVILLE asked the Minister of Labour whether, in view of the request for the inclusion of eyesight failure in the Workmen's Compensation Act, his department possessed any reliable record showing how the individual senses were affected by particular industries, and whether in such cases steps were taken to differentiate at any stage between failure due to advancing years and failure due to conditions of work.—Mr. LOCKER-LAMPSON (Under Secretary to the Home Office) replied: The department is in possession of a great deal of information as to diseases and affections which are caused by particular industries and processes, but so far as regards failure of eyesight, such as short-sightedness or other kinds of eye-strain, it would not be possible to differentiate between the effects of the conditions of work, advancing years, and other possible causes.

Viscount CURZON: Does the hon. gentleman's answer apply to the case of railwaymen disabled by injured eyesight?—Mr. LOCKER-LAMPSON: As my noble and gallant friend knows, certain afflictions of the eye are already included under the Act of 1906 and they are being added to.

Skimmed Dried Milks.

Mr. HURD asked the Minister of Health the result of his consideration of regulations for the proper labelling of skimmed dried milks as unfit for children.—Mr. NEVILLE CHAMBERLAIN replied: Draft regulations dealing with this matter have been prepared in my department and I am causing them to be forwarded to the other departments concerned as a preliminary to discussion.

Mr. HURD: Is there any necessity in this matter to consult other countries seeing it is purely a domestic affair of our own?—Mr. CHAMBERLAIN: So far as I am aware it will not be necessary.

Approved Societies and Voluntary Hospitals.

Sir EDWIN STOCKTON asked the Minister of Health whether, in view of the amount of disposable surpluses of approved societies under the National Health Insurance Act, he would consider the desirability of introducing legislation for the allocation of funds therefrom for the hospital maintenance of insured patients, seeing that such a policy would materially contribute towards meeting the total annual deficiency of the voluntary hospitals.—Mr. NEVILLE CHAMBERLAIN replied: It is open to any approved society having a disposable surplus on valuation to devote the whole or part of such surplus to making payments to hospitals or convalescent homes towards securing the maintenance and treatment therein of members of the society, and out of the surpluses on the first valuation a sum of £979,000 was set aside for this purpose by certain societies in England in respect of the period from July, 1921, to June, 1926. The selection of the additional benefits to be provided by a society for its members rests with the members themselves, and I do not think it desirable that legislation should be introduced to make it compulsory on every society having a disposable surplus to allocate the whole or part of the surplus to any particular additional benefit.

Mr. GERALD HURST asked the Minister of Health whether he was aware of the hardship caused by the disability which now debarred voluntary hospitals from sharing in surplus funds which had accumulated under the National Health Insurance Act, and that the Manchester Royal Infirmary spent about £70,000 a year in maintaining nearly 5000 persons insured under that Act without drawing any substantial contributions from their approved societies; and if he would consider so amending the law that maintenance and treatment at voluntary hospitals might be included among the additional statutory benefits to be provided from disposable surplus funds.—Mr. NEVILLE CHAMBERLAIN replied: There is no such disability as is mentioned in the first part of my hon. friend's question, and the making of payments towards the cost of the maintenance and treatment of insured persons at voluntary hospitals is already included amongst the additional benefits which may be provided by approved societies from their disposable surplus funds. Such payments are, in fact, being made by a number of societies with a total membership of over 7,000,000 insured persons. The second part of the question does not therefore arise.

Poor-law Midwifery Fees.

Lieut.-Colonel FREMANTLE asked the Minister of Health if he was aware that Poor-law midwifery fees had not been revised since 1847; and whether he would take steps to bring them into line with the fees ruling at present for services of a similar nature.—Mr. NEVILLE CHAMBERLAIN replied: It is true that the Order of 1847 has not been revised, but in a number of cases special arrangements between the guardians and their medical officers as regards midwifery fees have already been approved. I will, however, consider the question of the revision of this part of the order.

Patent Medicines Legislation.

Lieut.-Colonel FREMANTLE asked the Minister of Health if it was proposed to introduce a Bill to give effect to the recommendations of the Select Committee on Patent Medicines, proposals for which were agreed with the parties concerned in 1920.—Mr. NEVILLE CHAMBERLAIN replied: In the present state of business the Government cannot undertake to introduce legislation on this subject during the present session.

Pasteurised Milk.

Mr. ADAMS asked the Minister of Health whether he was aware that, owing to the Milk (Special Designations) Order, 1923, modifying previous orders regarding pasteurisation, it was possible for milk to be sold to the public after having been subjected to repeated heating processes, thus having the major portion of its nutritive value destroyed; and whether he would take the necessary steps to ensure that such reheated milk should not be retailed to the public or, if so retailed, its exact nature should be indicated.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the negative. It is expressly provided in the Milk (Special Designations) Order, 1923, that the milk sold as "Pasteurised" milk shall not be heated more than once. As regards the second part of the question, I am advised that the danger arising to public health from the sale of reheated milk is not such as to justify the issue of special regulations which in present circumstances might result in restricting the supply of milk.

Vaccination and Small-pox.

Dr. CHAPPLE asked the Minister of Health what was the proportion of vaccinated to unvaccinated children of the age of 10 years and under; whether there had been any progressive change in this proportion; and what steps he proposed to take in order to safeguard the population against a possible epidemic of small-pox.—Mr. NEVILLE CHAMBERLAIN replied: It is not possible to state definitely what proportion of the children now living of the age of 10 years and under has been vaccinated. The available statistics show the numbers of children born in each year who were vaccinated within a period expiring at the end of the year following the year of birth. These statistics suggest that the proportion of children now living of the age of 10 years and under who have been vaccinated is not more than 50 per cent. I will send the hon. Member a statement giving the figures for each of the years 1912 to 1921, and showing that the proportion of vaccinations to births has fallen from 50·1 per cent. in 1912 to 38·3 per cent. in 1921. As regards the last part of the question, my department has recently circulated to sanitary authorities and boards of guardians memoranda as to the steps which should be taken on the occurrence of small-pox, and all possible assistance is rendered by medical officers of my department to the authorities of those districts in which an outbreak occurs.

Mr. TREVELYAN THOMSON asked the Minister of Health the average percentage of vaccinations to total births for the last five decennial periods and the number of cases of small-pox per 1000 of the population for the same periods.—Mr. NEVILLE CHAMBERLAIN replied: As regards the first part of the question the percentages of vaccinations to total births in the periods referred to were as follows: 1872–1881, 85·6; 1882–1891, 82·2; 1892–1901, 68·0; 1902–1911, 67·9; 1912–1921, 43·4. As regards the second part, particulars as to the total number of cases of small-pox in England and Wales are not available for any year prior to 1911. The number of cases per 1000 of the population for the period 1912–1921 was 0·004.

Replying to Mr. HURD, Mr. CHAMBERLAIN said that he was keeping a close watch upon the situation, and so far as he could see at present there was no need for special legislation.

Mr. THOMSON: Has the right hon. gentleman any information which shows whether the percentage of cases of small-pox has increased relatively to the decrease in the number of vaccinations?—Mr. CHAMBERLAIN: Yes, undoubtedly.

Viscount CURZON: Has the right hon. gentleman any explanation with regard to the very remarkable drop in the last set of figures which he gave from 67 per cent. to 43 per cent.?—Mr. CHAMBERLAIN: I think that is due to the agitation against vaccination which has taken place in various parts of the country.

Mr. FRANK GRAY asked the Minister of Health whether he had any information indicating that a large number of cases at Gloucester had been wrongly diagnosed by officials of his department, and whether he proposed to take any steps in the matter.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the negative, and the second part therefore does not arise.

Mr. SNOWDEN asked the Secretary of State for the Home Department whether his attention had been called to the difficulties put in the way of parents wishing to take advantage of the Vaccination Act, 1907, by magistrates who disapproved of exemption being granted to objectors to vaccination; and whether he would inform all magistrates sitting in open court that they must accept statutory declarations under that Act, whatever their views in respect of vaccination.—Mr. LOCKER-LAMPSON replied: Complaints are occasionally made that individual magistrates refuse to receive declarations, but they have been very infrequent. The Secretary of State has no authority to give the instructions suggested in the last part of the question, but he has repeatedly said that it is the duty of justices to take care that no unnecessary difficulties are put in the way of those desirous of exercising their statutory rights.

THURSDAY, JULY 5TH.

Tuberculosis in Scotland.

Mr. MURNIN asked the Under Secretary to the Scottish Board of Health the number of persons who died in Scotland during 1921-22 from tuberculosis.—Captain ELLIOT replied: The number of deaths in Scotland from tuberculosis was 5737 in the year 1921 and 5818 in 1922.

Small-pox and Chicken-pox.

Major Sir FREDERICK KELLEY asked the Minister of Health whether, in view of the danger that mild cases of small-pox might not be recognised as such, he would consider the issue of a statement instructing parents and others how incipient small-pox may be distinguished from chicken-pox.—Lord E. PERCY replied: My right hon. friend does not consider that the issue of such a statement would be of advantage. It is the function of the medical practitioner in attendance upon a patient to distinguish incipient small-pox from chicken-pox, and the services of the medical officer of health are at his disposal in assisting in the diagnosis of doubtful cases.

Deaths from Small-pox.

Mr. TREVELYAN THOMSON asked the Minister of Health the percentage of deaths to cases of small-pox in each of the last five years, showing separately the figures for those vaccinated and those who had never been vaccinated.—Lord E. PERCY replied: As the protection afforded by vaccination diminishes with lapse of time, I have divided the deaths of vaccinated persons into age groups. The figures are as follow:—

Percentage of Deaths to Cases of Small-pox.

Year.	Vaccinated.			Unvaccinated.
	10 years and under.	Over 10 and under 40.	40 and over.	
1918 ..	—	3·4	3·4	Nil.
1919 ..	—	0·6	3·2	20·8
1920 ..	—	1·5	8·3	13·8
1921 ..	—	—	1·0	1·5
1922 ..	—	0·4	4·1	1·6

Health Absences of School-children.

Mr. EDE asked the President of the Board of Education if he would be prepared to recognise absences of children from elementary schools to receive sanatorium, hospital, or other medical treatment when such absences were ordered by the school medical officer or the medical officer of health as ranking with those specified in paragraph 23 (*c*) of Schedule 4 of the Code and would allow them to count as attendances under Article 44 (*h*) of the Code, thereby removing an anomaly that became increasingly apparent with the growing vigilance of the school medical service of the country.—Mr. E. WOOD replied: The suggestion made in the question raises points of financial and administrative importance, and I cannot commit myself to reconsider the existing arrangements at the present time.

Pensioners and Medical Treatment.

Mr. ROBERT YOUNG asked the Minister of Pensions what was the number of pensioners who were receiving medical treatment, how many of these were in military hospitals, how many were in general hospitals, how many were receiving home treatment, and of the total number how many were undergoing treatment which prevented them being employed in any occupation.—Major TRYON replied: There are approximately 76,500 officers and men receiving treatment at the cost of my department, of whom about 41,600 are prevented by the treatment from following their occupations. Of the total mentioned, 18 are in military hospitals, 3650 are in general hospitals, and 9300 are receiving home treatment. These figures do not include men receiving treatment, without allowances, from their panel practitioners, of whom I have no record.

MONDAY, JULY 9TH.

Infantile Mortality.

Mr. A. V. ALEXANDER asked the Minister of Health the number of deaths of children for each year from 1914 to 1922, giving separate figures for illegitimate children and covering the ages of under 12 months, over 1 year and under 2 years, and over 2 years and under 3 years respectively.—Mr. CHAMBERLAIN replied: No figures respecting deaths of illegitimate children of 1 to 2 years or 2 to 3 years of age are available prior to 1919, when they were first abstracted. The rest of the required figures are given below:—

Deaths: England and Wales.

—	Under 1 year.		1-2 years.		2-3 years.	
	Total.	Illegitimate.	Total.	Illegitimate.	Total.	Illegitimate.
1914 ..	91,971	7,712	24,967	—	10,072	—
1915 ..	89,380	7,369	30,279	—	12,482	—
1916 ..	71,646	6,000	20,009	—	8,611	—
1917 ..	64,483	7,474	20,296	—	9,724	—
1918 ..	64,386	7,694	26,447	—	14,955	—
1919 ..	61,715	7,237	14,124	1,131	7,658	469
1920 ..	76,552	7,017	14,741	1,162	6,100	364
1921 ..	70,250	6,115	15,636	1,041	4,994	336
1922 ..	60,121	4,736	18,948	1,064	8,678	453

Illegitimate Births.

Mr. A. V. ALEXANDER asked the Minister of Health the number of children born in each of the years from 1914-22, giving the numbers separately for illegitimate births.—Mr. CHAMBERLAIN replied: The numbers of children born (total and illegitimate) for each year 1914 to 1922 are shown below:—

Births: England and Wales.

Year.	Total.	Illegitimate.	Year.	Total.	Illegitimate.
1914 ..	879,096	.. 37,329	1919 ..	692,438	.. 41,876
1915 ..	814,614	.. 36,245	1920 ..	957,782	.. 44,947
1916 ..	785,520	.. 37,689	1921 ..	848,814	.. 38,618
1917 ..	668,346	.. 37,157	1922 ..	780,124	.. 34,138
1918 ..	662,661	.. 41,452			

TUESDAY, JULY 10TH.

Scottish Public Health Authorities.

Mr. DUNCAN MILLAR asked the Under Secretary to the Scottish Board of Health whether, in view of the widespread anxiety and apprehension created by the Report of Scottish Board of Health Consultative Council recommending the abolition of the parish councils in Scotland and of the smaller burghs and public health authorities, he could give an assurance that no steps were at present contemplated to give effect to the views of the Consultative Council, and that the fullest opportunity would be afforded to the parish councils and burghs and other public health authorities to express their views before any decision was arrived at.—Captain ELLIOT replied: I am now aware that the publication of the Report referred to has created anxiety and apprehension, but the hon. Member may rest assured that no decision will be taken on the matters referred to without full opportunity to the local authorities mentioned to express their views.

Selection of R.A.M.C. Officers.

Mr. BECKER asked the Under Secretary of State for War if all officers in the Royal Army Medical Corps eligible for selection to the higher ranks were personally interviewed by the selection board; and could he give his assurance that none would be passed over who had not been so interviewed.—Lieut.-Colonel GUINNESS replied: The answer is in the negative. I do not think that a system of inviting officers to attend and make out a case for their own promotion would be at all satisfactory, even if all the officers concerned were always available for such attendance, which they are not. It rarely happens, however, that an officer is not known personally to the majority of the selectors.

Appointments.

DENT, HELEN P., M.B., B.S. Lond., has been appointed Maternity and Child Welfare Medical Officer, Leicester.

GALBRAITH, S. N., M.B., Ch.B. Glasg., Medical Officer of Health for South-West Kent.

GIMBLETT, CHARLES LEONARD, M.D. Camb., F.R.C.S. Eng., Hon. Assistant Surgeon to the Royal Westminster Ophthalmic Hospital.

KIEP, W. H., M.B., Ch.B. Glasg., an Hon. Ophthalmic Surgeon to the Royal Ear and Eye Hospital, Bradford.

Certifying Surgeons under the Factory and Workshop Acts: MCNAUGHTAN, W., M.B., Ch.B. Edin. (Hawes); DOBSON, J. G., M.B., Ch.B. Edin. (Chirnside); LOWRY, E. W., M.R.C.S., L.R.C.P. Lond. (Brentford and Ealing); ARTHUR, W. B., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. (Wingate).

Vacancies.

For further information refer to the advertisement columns.

Blackburn and East Lancashire Royal Infirmary.—Third H.S. £250.
Bradford Royal Infirmary.—H.S. £150.
Braintree and Dunmow United Sanitary Districts.—M.O.H. £700.
Bristol Mental Hospital.—M.O. and Pathologist. £400.
Cheshire Joint Sanatorium, Loggerheads.—A.M.O. £350.
Chester, East Lancashire Tuberculosis Colony, Barrowmore Hall, Gt. Barrow, near Chester.—Med. Supt. £800.
Chesterfield and N. Derbyshire Royal Hospital.—Cas. O. and Orthopædic Surg. £170.
Derbyshire Sanatorium, Chesterfield.—Locum A.M.O. £300.
Dreadnought Hospital, Greenwich, S.E.—H.P. £150.
East African Medical Service.—M.O. £600.
East London Hospital for Children.—H.P. £125.
Evelina Hospital for Children.—H.P. £160.
Glasgow University.—Chair of Public Health.
Gloucester City.—M.O.H. £1000.
Hospital for Consumption and Diseases of the Chest, Brompton.—H.P.
Leeds General Infirmary.—Orthopædic H.S.
Manchester Radium Institute.—Anæsthetist. £100.
Manchester Royal Infirmary.—H.S. Aural, &c., Depts. £100. H.P.'s. £100. Surg. Registrar. £150. H.S.'s. £100.
Middleton-in-Wharfedale Sanatorium, Ilkley.—Res. A.M.O. £325.
Miller General Hospital for South-East London, Greenwich-road, S.E.—H.P. £150.
National Hospital for Diseases of the Heart, Westmoreland-street, W.—Res. M.O. £150.
Northampton General Hospital.—Two H.S.'s. Each £200.
Norwich City.—Temporary Assistant in Public Health Dept. £10 per week.
Nottingham Children's Hospital.—Res. H.S. £150.
Poplar Hospital for Accidents.—Locum Tenens Senior Res. Surg.
Preston, Lancs, County Mental Hospital, Whittingham.—Locum Tenens M.O. £8 8s. per week.
Rotherham Hospital.—Jun. H.S. £150.
Royal Naval Medical Service.—Surgeon-Lieutenants.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Cas. O. £150.
Salford Royal Hospital.—Honorary Dental Surgeon.
Stoke-on-Trent County Borough.—Asst. M.O. £500.
Tiverton Hospital, Devon.—H.S. £100.
Wandle Valley Isolation Hospital.—R.M.O. £400.
West African Medical Service.—M.O. £660.
Windermere.—Ethel Hedley Hospital for Crippled Children. H.S. £150.
Wolverhampton and Staffs Hospital.—H.S. £150.
Wrexham Infirmary.—H.S. £150.

Births, Marriages, and Deaths.

BIRTHS.

BARRY.—On June 24th, at Hyde Park Barracks, the wife of Captain S. J. Barry, R.A.M.C., of twin sons.
KELLOCK.—On July 4th, at Upper Wimpole-street, W., the wife of the late T. H. Kellock, M.D., M.Ch., F.R.C.S., of a son.
LONGSTAFF.—On July 3rd, at Picket Hill, near Ringwood, the wife of Dr. T. G. Longstaff, of a daughter.
MADGE.—On July 4th, at Brookside, Ashbourne, Derbyshire, the wife of Dr. Quintus Madge, of a son.
MORLEY.—On June 28th, at "Grasmere," Mill Hill, N.W., the wife of Allan Morley, M.B. Lond., of a daughter.

MARRIAGES.

FERRIER—CONEY.—On June 26th, at Studland Church, Swanage, David Ferrier, M.D., of Dunstable-road, Luton, to Adeline Maud Coney, daughter of the late S. W. Coney, Bournemouth.
POSTLETHWAITE—CLAYTON.—On July 3rd, at St. Augustin's Church, Bournemouth, William Barry Postlethwaite, M.B., M.C., to Barbara Clayton, the younger daughter of Dr. and Mrs. A. J. Clayton, of Wimborne-road, Bournemouth.

DEATHS.

BURY.—On July 4th, at Galtee House, Foxley-lane, Purley, Surrey, George Bury, L.R.C.P., M.R.C.S., aged 93.
KIRBY.—On July 3rd, at Bromley Lodge, Bromley, Kent, Dr. Albert Edward Kirby, M.R.C.S. Eng., aged 74.
MURIEL.—On July 3rd, at Glenfield, Whitehaven, George John Muriel, J.P., M.R.C.S. Eng., in his 81st year.
SAYER.—On July 7th, after a prolonged illness, Dr. Ettie Sayer, M.B., B.S., of Ennismore-gardens, W.
STEWART.—On July 3rd, at his home, Yeoveney, Alexandra-road, Watford, suddenly from heart failure, Alexander Brodie Seton Stewart, late of Leeds, Lieut.-Colonel, R.A.M.C.(T.), O.B.E., T.D., Order of St. Sava of Serbia.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

FURTHER NOTES ON SMALL-POX DIAGNOSIS.

BY W. MCCONNEL WANKLYN, B.A. CAMB., M.R.C.S. ENG., D.P.H.

To include within a few lines, such as those published in THE LANCET on July 7th, all that should be understood upon this subject is clearly impracticable; the following additional notes may therefore be useful. As the subject is one of the humblest of our professional duties and one which we are endeavouring to get rid of as soon as possible, so also is it one of absolutely fundamental importance for each one of us to tackle until our island is cleared of small-pox beyond any possibility of its return. The laity are keenly alive to the financial risks; when those risks mature they require someone's blood. That is the fact. Many of us may never have a suspected case; some are dead certain to have one or more; and yet others, if unprepared, may thereby be ruined. Wherefore the main point and kernel of interest for us in the matter is not any clinical, academic, or epidemiological feature per se; we have no time for such; but it is this. Can I be reasonably sure of at least challenging any single case of this odious disease that may drift my way? It is with such a query in mind that your readers may be pleased to glance at the notes of the following case, placed at my disposal by one of the various colleagues with whom I have had the pleasure of seeing cases in consultation. An effort is being made to file and reproduce such cases for mutual guidance, and any other notes of the kind will be welcomed. Only those points have been brought out which are likely to be of direct value to the reader, when faced with an awkward case.

An Awkward Case.

The case was that of S. S., a female, aged 6. It was obviously either small-pox or chicken-pox. A count of the spots showed as follows:—Right hand, 5; right forearm, 1; right arm, 10; right foot, 3; right leg, 4; right thigh, 15; left foot, 2; left leg, 4; left thigh, 11; face, 15; front of trunk, 50. This, taken with the superficial and peculiar character of the vesicles, and the absence of initial or constitutional symptoms, was sufficient to establish a diagnosis of chicken-pox. There remained for consideration the rash on the left upper extremity. This was very remarkable. On the left hand were 14 lesions, on the left forearm 4, on the left arm 10. It was the remarkably thick crop on the left hand which led to this case arousing a suspicion of small-pox. But when the facts were gone into this was noted. Previous to her attack of chicken-pox, the child had been suffering from an acutely septic condition of the left hand, for which she had been attending hospital, and it was upon this inflamed area that a numerous and well-developed crop of vesicles had settled.

Herein we come upon a phenomenon which, well known in small-pox, is also present in chicken-pox to a less degree, that is the selection by the rash of irritated surfaces. This much at least comes out as noteworthy, that that factor itself is not pathognomonic of small-pox. I have seen numerous remarkable instances of the same phenomenon in chicken-pox. In one recent case the outline of the garters below the knees in an adult was conspicuously picked out by the rash of small-pox. I have also seen scratch marks picked out by the rash of chicken-pox and other similar sites of irritation, such as those on the skin of ill-tended children.

Four Main Criteria.

It comes to this: that there is no single golden rule, no measuring tape or touchstone by which we can say: This is chicken-pox; that is small-pox. In nine cases out of ten in which the diagnosis rests between chicken-pox and small-pox in an adult, a count of the spots on the upper extremities will correctly point to the truth. In the tenth, it may not so point, as was demonstrated to me by a case only two or three days ago. In children there is more variety in the distribution of the rash of chicken-pox than there is in adults. It more often varies from the accepted type. In all the cases, however, which I can recall, the degree of prostration has been a valuable sign. That is seldom so marked in any case of chicken-pox as it is in small-pox; and it is a remarkable point that where a copious rash due to chicken-pox occurs in a patient, in that patient there is commonly no such degree of prostration as almost invariably occurs in an attack of small-pox of corresponding degree. The four main points which I have consistently found to be most useful in my work are: (1) The distribution of the rash; (2) the degree of prostration; (3) the relative depth of the lesions in the skin; and (4) the maturation of the lesions.

There seldom occurs a case in which the evidence drawn from the facts grouped under these four heads and duly weighed fails to yield a correct decision. And such evidence has this further advantage, that it is readily accessible.

THE WELFARE OF MENTAL PATIENTS.

Two gatherings, important in relation to the welfare of mental patients, were held in London on July 12th.

The Mental Hospitals Association

met at the Guildhall. Among the items on a full agenda was a report of the Executive Committee commenting on the Mental Treatment Bill recently introduced. It is accepted that the clauses, which are not in effect so far-reaching as was desired by the Association, contain provisions which, when passed into law, cannot fail to prove beneficial to those suffering from incipient or recurring mental illness. The Bill has received the careful consideration of the Committee which has addressed a communication to the Minister of Health upon various provisions. It is urged that as a general principle it is undesirable to coöpt members on visiting committees who are not directly elected by the ratepayers, and that it is not equitable to give persons who are not directly responsible to the ratepayers, power to coöperate in the direction of the expenditure of the ratepayers' money. As to out-patients, a visiting committee would not be able, it is thought, to contribute to the cost of an out-patient department for mental treatment in a general hospital. Moreover, where, as in many instances, the mental hospital is situated at a considerable distance from large centres of population, it might be desirable to institute an out-patient department away from the mental hospital. The members have been asked by those interested in the management of private institutions and registered hospitals who are subscribers to their Association to urge that no restrictions should be set up under the Bill on the facilities such institutions now have in connexion with the reception, maintenance, and discharge of voluntary boarders. In the opinion of the executive the provisions of the subsection of the Bill dealing with after-care militate against the voluntary principle; they consider it undesirable that after a patient has been discharged from trial he should be in any way associated with the institution. Other minor criticisms are made. Representatives of the Association on the Joint Conciliation Committee have been conferring with the National Asylum Workers' Union for some months past as to the possibility of stabilising, by improving the conditions of service of, the nursing staff in mental hospitals. It is held that probationers should be subject to medical examination before engagement and that they should have reached a certain standard of education—e.g., have passed either the seventh standard at an elementary school, or the Junior Oxford or Cambridge Local Examination, and that the governing authorities be requested to dispense with the services of any probationer nurse who does not make due and diligent efforts to attain the recognised standard of proficiency. The formation of a sports club in every institution to promote recreation among the staff is suggested. It was stated that the Joint Committee have been involved in correspondence with the Ministry of Health as to the constitution and proceedings of a committee set up by the Board of Control, "to consider the nursing service in county and borough mental hospitals and in what direction it can be improved," to which the Joint Committee were not invited to send representatives. As the constitution of the Board of Control's Committee did not commend itself to members of the Joint Committee, it had been unanimously decided not to accept the offer of the Ministry and of the Board of Control to give evidence and submit themselves or their representatives to cross-examination as to their proceedings; but the Joint Committee would continue to furnish the Board, as had been its practice in the past, with copies of the various recommendations which the Joint Committee may from time to time decide upon.

The inaugural meeting of the

National Council for Mental Hygiene

was held at Caxton Hall, Westminster. The chairman of the Council is Sir Courtauld Thomson and the joint hon. secretaries Dr. J. L. Birley and Lieut.-Colonel J. R. Lord. In America a national committee for mental hygiene has been doing valuable work for a number of years, and an international mental hygiene movement has now been launched. The chief purposes of the movement are to work for the conservation of mental health; to promote the study of mental disorders, mental defects, and delinquency in all their forms and relations; to obtain and disseminate reliable data concerning them, to help to raise the standard of care and treatment, and to coördinate existing agencies. The special aims of the British National Council include among others: the improvement of the mental health of the community; the study of the causes underlying congenital and acquired mental disease with a view to its prevention; the securing of a more important position for the study of psychiatry in the medical curriculum and the closer association of psychiatry with general medicine; to further the establishment of special clinics and out-patient departments for the early treatment of mental disorders, and to raise the standard of care and treatment in the public mental hospitals; the study of criminality, dependency, vagrancy, and prostitution, in so far as they are failures of adjustment by reason of mental disease or defect; the study of mental hygiene of child-life in relation to education and parental responsibility. The Council hopes to be the liaison between all societies, associations, and other bodies interested in or concerned with mental hygiene, and as far as it can with advantage coöperate with them. The annual subscription for full members is 1 guinea, for associate members 5*s*. Donations may be sent to hon. treasurer, Lord Southborough, at Room 55, Windsor House, Victoria-street, London, S.W.1.

A BIBLIOGRAPHY OF SOCIAL HYGIENE.

A COMPREHENSIVE bibliography of social hygiene, demography, and vital statistics has just been issued by Prof. A. Grotjahn and Dr. phil. F. Kriegl, edited by Dr. Hans Haustein, of Berlin. (Berlin: Richard Schoetz. 1923. Pp. 262. 4*s*.) The pamphlet contains some thousands of references in various languages to books and papers which appeared in the year 1921, under headings which include the social hygiene of work, of food, of dwelling and clothing for children and young persons, social insurance, and the hygiene of reproduction. The pamphlet will be found a useful work of reference by all who are working in a field to which post-war conditions have given a very urgent importance.

A DETOXICATED PHOTOGRAPHIC DEVELOPER.

METOL, introduced in 1891 as a photographic developer, suffers from the drawback of being seriously irritating to the skin. This is the case with the ordinary commercial form, but it has now been shown by Mr. W. F. A. Herman (*Chemistry and Industry*, May 18th), working in the department of photographic research of the British Dyestuffs Corporation, that pure metol is quite innocuous to the skin. That this was the case has long been suspected, but Mr. Herman has been able to isolate and determine the constitution of the poisonous impurity. By adopting a modification in manufacture, metol free from irritant action can now readily be produced, and Mr. Herman has conferred a boon upon photographers.

A REGISTER BOOK FOR DANGEROUS DRUGS.

Messrs. John Wright and Sons, Ltd., have brought out a register recording the purchase, sale, and stock-in-hand of such dangerous drugs as are scheduled under the Act of 1920. It is intended for the use of medical men, and the preface contains extracts from the regulations issued by the Home Office in Janurary, 1923, including those applicable to (1) all doctors; (2) dispensing doctors. Different coloured pages with thumb-index are provided for records of morphine and salts, diamorphine (heroin) and salts, cocaine and ecgonine and salts, and medicinal opium. The whole is issued in a handy form at 7*s*. 6*d*.

COLONIAL HEALTH REPORTS.

Nyasaland.

THE report for this Protectorate for 1921, for some reason delayed, has now been presented to Parliament. It states that during the year the general health was satisfactory. In the Mlanje district small-pox broke out from time to time, apparently introduced from Portuguese East Africa. In other areas the outbreaks were of a sporadic nature and were easily controlled. Two cases of bubonic plague were reported from the North Nyasa district, but neither case was seen till after death. Although careful investigation was made no further cases were revealed, neither was there any noticeable epizootic disease among the rats with which the district is infested. Barium carbonate was reported to be the most satisfactory of the various rat poisons with which experiments were made during the year. As regards the treatment of venereal disease, experience seems to show that the mental attitude of the native is the same towards this disease as towards others, and that treatment is not usually sought until serious inconvenience is occasioned. Nevertheless, venereal hospitals for the treatment of natives were opened in seven districts during 1921, and the returns show that a beginning has been made in familiarising the people with the opportunities afforded them at these treatment centres. At the venereal hospitals the treatment of yaws is also undertaken, and later on it may be possible to deal more thoroughly with this disease, which is endemic and widely prevalent in the Dedza district. The medical staff was increased during the year, and this

fact, combined with other circumstances, enabled medical aid to be extended to districts hitherto unprovided for. Indian subassistant surgeons are stationed at posts of secondary importance, and, in addition, rural dispensaries are being opened in the more populous centres in each district under the charge of natives trained for the purpose and visited periodically by medical officers or subassistant surgeons. It is hoped that such schemes for increasing the medical facilities afforded to natives in remote districts will be further developed and extended in other directions as soon as the finances of the Protectorate permit. It is understood that the drug Bayer "205," which is being experimented with in the Northern Rhodesia, is a decided advance on any treatment which has hitherto been employed in the cure of trypanosomiasis. The medical entomologist is studying the preventive side of this disease. As regards sickness amongst the European population, 366 cases were treated during the year by the medical department, and there were 12 deaths. Malaria was responsible for 28 per cent. of the cases dealt with, and, of course, many cases of malaria are self-treated and do not come under official cognisance. Gastro-intestinal disorders, respiratory complaints, and dysentery made up the bulk of the other cases treated. There were 14 cases of blackwater fever, resulting in two deaths. European and native hospitals are maintained by Government at Blantyre, Zomba, and Fort Johnston, and additional native hospitals at Port Herald, Mlanje, and Karonga; others are in course of erection or are to be built later. The various missions established in the Protectorate continue to do a considerable amount of medical work. According to the census taken in April, 1921, the population of Nyasaland was 1486 Europeans, 563 Asiatics, and 1,199,934 natives (558,138 males and 641,796 females). The climate in its essential features is similar to that of the rest of Eastern Africa within the tropics. As a large proportion of the Protectorate lies at an altitude of 3000 feet or more the heat is not generally excessive.

Falkland Islands.

Mr. H. Henniker-Heaton, colonial secretary, in his report for 1921, states that according to the census taken in April of that year the total population of the colony, exclusive of crews of ships in harbour in Stanley, numbered 2087 (males 1182, and females 905). South Georgia, the only part of the dependencies which is permanently habitable, had at the same time a population of 1337 (of whom only three were females), mainly engaged in whaling, no fewer than 998 being set down as natives of Sweden or Norway. The Falkland Islands proper, consisting of East Falkland and West Falkland, are entirely devoted to sheep-farming; in general appearance they are treeless, bleak, and inhospitable, resembling closely parts of the north-west coast of Scotland and the Shetland Islands. The inhabitants are almost exclusively people of pure British descent; they are hardworking, thrifty, and peaceable. The climate is generally healthy, and there is neither endemic nor epidemic sickness in the country. In the dependencies, also, there is very little sickness, even colds being of rare occurrence, though some unhealthiness is caused by the absence of fresh provisions.

INSULIN "A.B." BRAND.

THE British Drug Houses, Ltd., announce that increased output of insulin "A.B." brand has enabled them to effect a reduction in its price from 2*s.* 6*d.* to 1*s.* 9*d.* per dose. Bottles containing 5 c.cm. (100 units or 10 doses) are now priced at 17*s.* 6*d.* per bottle; bottles containing 10 c.cm. (200 units or 20 doses) at 35*s.* per bottle. These prices have been arranged in agreement with the Medical Research Council and are effective as from July 12th, 1923. Supplies of insulin "A.B." brand now available are sufficient to meet all demands.

GAS CYLINDERS IN HOT WEATHER: SAFETY FIRST.

THE explosion of a gas cylinder in the operating theatre of a London hospital early this week—most fortunately without harm to life or limb—is a reminder of the fact that respect must be paid to the laws of expansion of liquids and gases, although almost complete immunity from such accidents in medical practice has led to their being overlooked. Oxygen and hydrogen being non-liquifiable at ordinary temperatures expand in orderly fashion, and although it is undesirable to expose such cylinders to direct sunshine the risk is not very great. But in the case of CO_2 and N_2O, which are present in liquid form in the cylinders, the coefficient of expansion is much greater than that of gases; hence, to guard against risk, these cylinders are only partially filled with liquid. The manufacturers enjoin strict precautions on their own staff. The British Oxygen Company, Ltd., for instance, issue a special summer notice to the effect that during hot weather full cylinders must not be left exposed to the sun in any part of the factory, and that naked cylinders conveyed in open vans, trucks, or by hand, must be covered.

A MONOGRAPH ON DEATH.

Dr. Eugen Holländer has brought out a German edition of Dr. F. Parkes Weber's well-known monograph on Death, under the title of Des Todes Bild. (Berlin: F. Fontane and Co. 1923. Pp. 274.) In a preface, addressed to the author, whose acquaintance he made shortly before the war "in the beautiful home of the Royal Society of Medicine in London," he speaks of medical men as having been in the past leaders and heralds of peace in all parts of the world and destined to play a part in putting on the lines again the derailed wheels of culture. Death, he says, has lost its terrors for hundreds of thousands of German families, and the problems of life and death have come nearer home to many who were not in the ordinary way philosophers; and Dr. Holländer instances the enormous increase in the German book trade as proof of the hunger after mental food and as a salutary counterpoise to mysticism and the resort to priestcraft. Apart from the preface, he has not added to Dr. Weber's book (which has on economical grounds been much abbreviated) material of his own, "in view of the completeness of the original." His prefatory remarks conclude with a note on euthanasia, or the teaching of the right manner of dying, as a lost art, which has, more than any other medical science, lapsed into forgetfulness. Alongside the ideal of a beautiful life stands as equally to be desired a beautiful death.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE. West London Hospital, Hammersmith-road, W.

MONDAY, July 16th.—10 A.M., Mr. Maingot: Surgical Pathology. 2 P.M., Mr. Addison: Surgical Wards. 3 P.M., Mr. Simson: Diseases of Women.

TUESDAY.—10 A.M., Mr. Steadman: Dental Dept. 12 noon Dr. Burrell: Chest Cases. 2.30 P.M., Dr. Pritchard Medical Wards.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Mr. Simson: Gynæcological Demonstration. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 2 P.M., Mr. Bishop Harman: Eye Dept. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.

FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Mr. Endean: Venereal Diseases. 2 P.M., Mr. Banks-Davis: Throat, Nose and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.

TUESDAY, July 17th.—4.30 P.M., Mr. Leonard Phillips: The Scope of Cæsarean Section.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

Demonstration of Clinical Cases at 3.30 P.M.

MONDAY, July 16th.—Mr. Aubrey Goodwin: Gynæcological.
TUESDAY.—Dr. J. Metcalfe: Radiological.
WEDNESDAY.—Mr. C. H. Hayton: Throat and Nose.
THURSDAY.—Dr. Yealland: Medical.
FRIDAY.—Mr. E. Gillespie: Surgical.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.

THURSDAY, July 19th.—5 P.M., Mr. L. C. Phillips: The Treatment of Ante-partum Hæmorrhage.

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